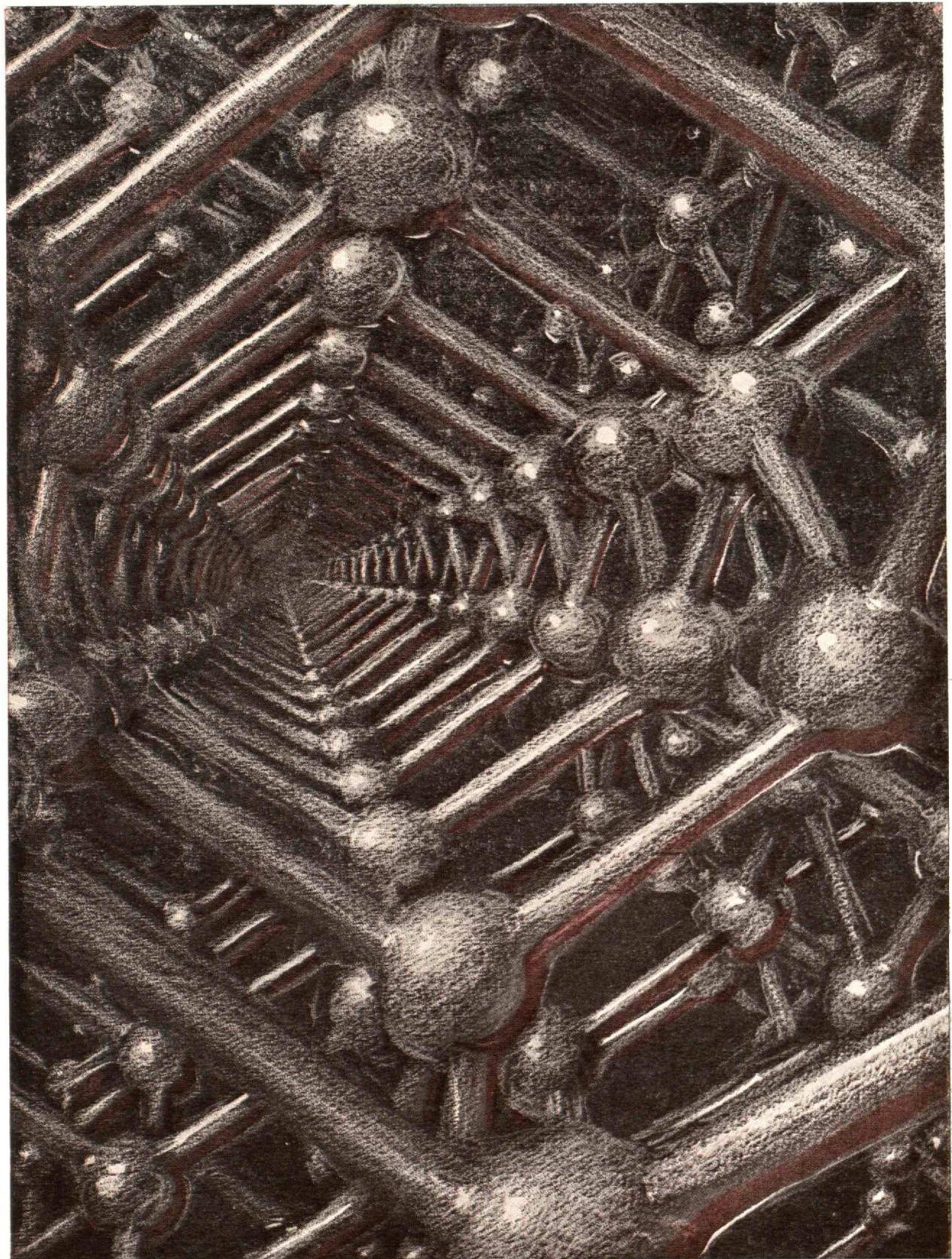


Technology Review

Edited at the Massachusetts Institute of Technology



December, 1965

Materials Science

technology review

Published by MIT

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For 1966, a Chevelle with a quick set of reflexes: SS 396.

We refer, of course, to our already famous 396-cubic-inch Turbo-Jet V8. Rated at 325 hp, it waits behind the hood latch of every SS 396, coupe or convertible. Unless you happen to specify the 360-hp version with a wilder cam. Torque in either case is over 400 lbs.-ft.

We also refer to the car's remark-

able handling ability, proof of which is the nearest twisting road. Stiffer springs and matching shocks are standard at all four wheels. So are red stripe tires and wide base rims, along with a heavier front stabilizer bar and a special rear axle. There's even a floor-mounted, fully synchronized 3-speed transmission; not

to mention the sinister black grille-work and two ominous bulges in the hood.

Need more convincing about this Chevelle's quick reflexes? Find yourself an SS 396 owner. If you can lure him away from the wheel long enough, get him to let you drive. Or, see your Chevrolet dealer.

NEW
CHEVELLE SS 396
by CHEVROLET 
Chevrolet Division of General Motors, Detroit, Michigan

ASROC



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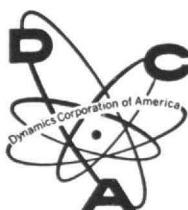
ANOTHER EXAMPLE OF MASSA CAPABILITY

Massa Division was selected as the first industrial manufacturer to produce the sonar sensing heads used in the MK-44 Acoustic Homing Torpedo. This torpedo is used as a payload in the ASROC weapon system. The sensing heads were previously manufactured in small quantities by Navy Ordnance. Massa's participation in the ASROC project is another example of its proven capabilities to provide critical sonar devices in large production quantities.

Other important Government projects in which Massa is currently participating include: SUBROC, DASH, PUFFS, and ARTEMIS.

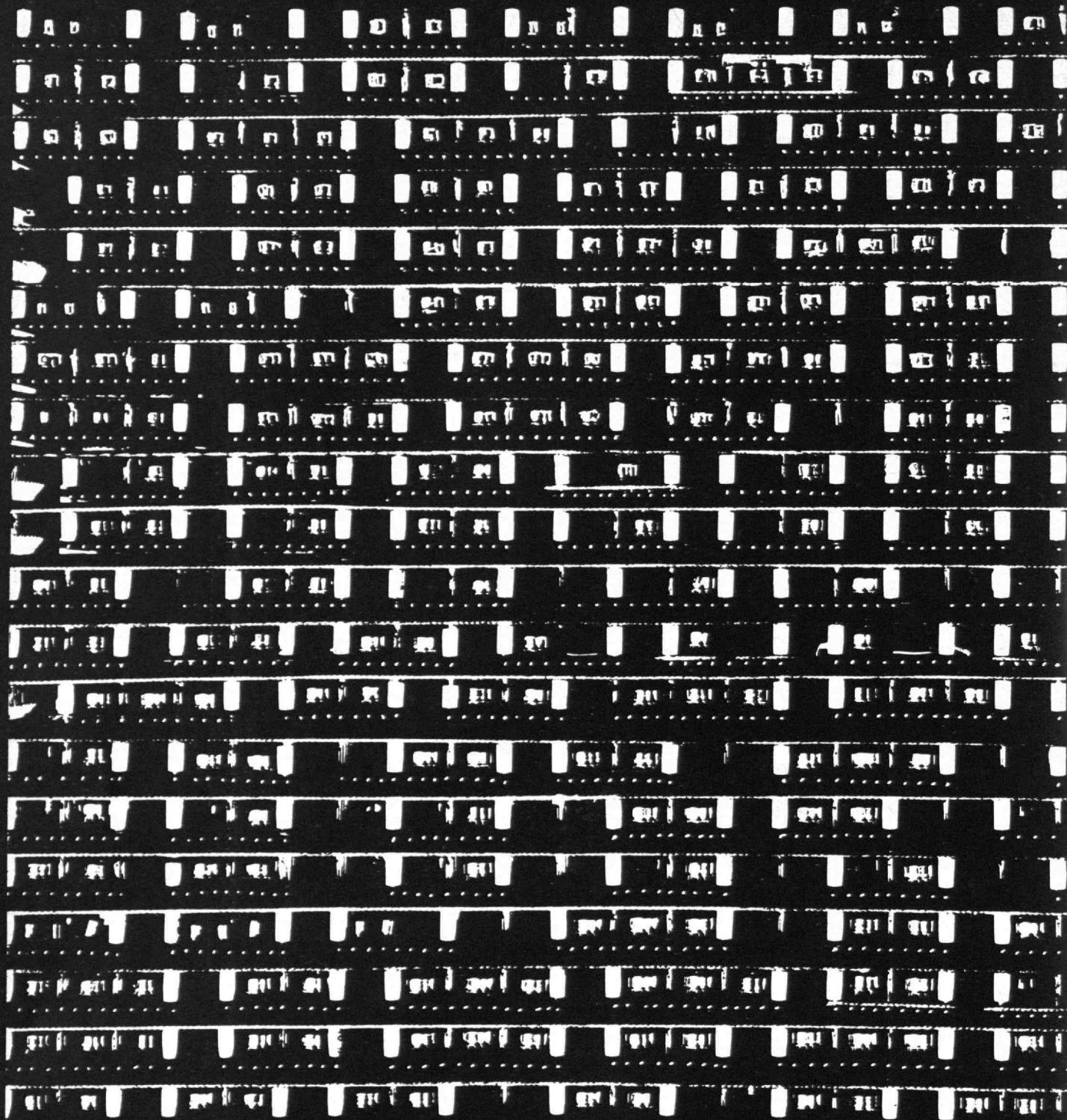
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Information Processing
Radio Physics and Astronomy
Radar
Computer Applications
Space Surveillance Techniques
Re-entry Physics
Space Communications
A description of the Laboratory's work will be sent upon request.

Technology

Review

Reg. U.S. Patent Office

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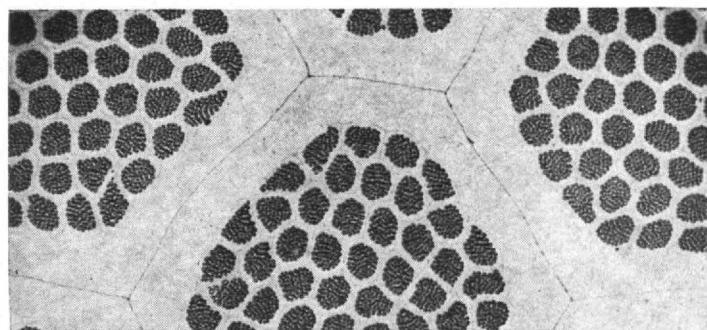
Professor Robert A. Smith describes work now under way in the new Vannevar Bush Building.

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A modern new laboratory building blends harmoniously with the much older M.I.T. structures.

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M.I.T. men help establish a great array of seismometers to identify explosions and earthquakes.

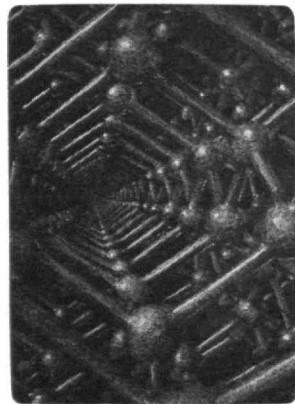
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THE COVER shows the tetrahedra arrangement in a diamond crystal of the four bonds formed by each carbon atom with its four neighbors, and is republished with permission from *The Architecture of Molecules*, by Linus Pauling and Roger Hayward, '22 (published this year by W. H. Freeman & Co., San Francisco).

I NDIVIDUALS NOTEWORTHY

Nobel Laureates

Two M.I.T. graduates were among the Nobel prize winners announced October 21 by the Swedish Royal Academy of Science. Professor Robert Burns Woodward, '36, of Harvard University won the chemistry prize, and Professor Richard Phillips Feynman, '39, of the California Institute of Technology shared the physics prize with Drs. Julian Seymour Schwinger of Harvard and Shinichiro Tomonaga of the Tokyo Education University.

Professor Woodward is noted for his synthesis of chlorophyll and other complicated organic compounds. He recently has added toxic substances that occur in nature to that list of achievements.

Professor Feynman and his co-winners of the physics prize contributed by their research to the clarification of problems in quantum electrodynamics. He received the Albert Einstein award for scientific achievement in 1954.

Professor Cited

The American Institute of Aeronautics and Astronautics has cited Associate Professor Gordon C. Oates of M.I.T. as one of the outstanding Faculty advisers of the year.

Professor Oates was selected because of his work in guiding the AIAA Student Branch activities at M.I.T. His concern for the professional training of his students and his dedication to the furtherance of their technical education has been unusual, the AIAA said.

On Science Board

Charles L. Miller, '51, Head of the M.I.T. Department of Civil Engineering, has been appointed as a member of the Latin America Science Board of the National Academy of Sciences. The Science Board advises the Agency for International Development of the U.S. Department of State on the utilization of science, engineering, and technology in Latin American development programs.



ROBERT BURNS WOODWARD, '36



RICHARD PHILLIPS FEYNMAN, '39

New Fellows

Associate Professor Kurt S. Lion has been appointed a permanent member of the Bio Instrumentation Advisory Council of the American Institute of Biological Sciences, and elected a Fellow of the Instrument Society of America. . . . William H. McAdams, '17, Emeritus Professor of Chemical Engineering and a lecturer at M.I.T. since his retirement, has been elected a Fellow Member of the American Society of Mechanical Engineers.

Faculty Chairman

The Faculty Nominating Committee on the New Chairman of the Faculty has nominated Professor Charles P. Kindleberger, of the Department of Economics, as Chairman of the Faculty to replace Professor Ascher H. Shapiro, '38, who resigned because of his appointment as Head of the Department of Mechanical Engineering. Professor Kindleberger has accepted the nomination and will complete Professor Shapiro's term.

Professor Kindleberger joined the M.I.T. Faculty in 1948. He has an international reputation for his scholarly work in international economics, international trade, and economic development and is the author of seven books in these fields, the most recent of which is *Economic Growth in France and Britain, 1850-1950*. He is now a member of the President's Committee on International Monetary Arrangements.

Real Estate Officer

Antony Herrey, '57, has been appointed Institute Real Estate Officer, a new post in which he will be responsible for M.I.T.'s real estate investments and rentals and for the development of new programs for Faculty housing.

Immediate plans for Faculty housing include the formation of a corporation designed to encourage more Faculty to live in Cambridge by helping them obtain suitable housing. It will acquire properties for rental and resale to Faculty and expand the information services of the existing Housing Office.

Mr. Herrey received an A.B. degree in Public Administration from Harvard in 1954 and an S.M. degree in Civil Engineering from M.I.T. He was on the staff of the M.I.T. Department of Civil Engineering during 1957-1958, then spent three years in Europe working on architectural and engineering projects. On his return to the United States, he organized a real estate development company.

(Continued on page 6)

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(Continued from page 4)

New Posts

Named in the news of promotions, elections, and appointments recently were:

Thomas D'A. Brophy, '16, as Head, 25th Anniversary Committee, USO . . . *Norman H. Dolloff*, '30, as Head, Department of Geology, San Jose College . . . *V. Lawrence Parsegian*, '33, as a Member, Committee on Science and Technology, U.S. Chamber of Commerce;

Allan Q. Mowatt, '35, as Vice-president and General Manager, Astrodyne, Inc. . . . *Robert Lev-*

enthal, '36, as Chairman, Construction Division, Massachusetts Bay United Fund Campaign . . . *Nathaniel M. Martin*, '38, as Staff Vice-president—Engineering and Construction, Olin Mathieson Chemical Corporation;

John T. Burwell, Jr., '34, *Maurice F. Granville*, '39, and *David Brown*, '40, as Members, Council on Engineering Affairs, Manhattan College . . . *William H. K. George*, '40, as Vice-president—Finance, Aluminum Company of America;

Richmond W. Wilson, '40, as Senior Engineering Associate, Corning Glass Works . . . *John A. Rockett*, '44, as Director of Basic Research on Fire Phenomena, Factory Mutual System . . . *I. Joel Feldstein*, '47, as Vice-president and Manager, Ruxford Laboratories, Inc.;

James W. Martin, '47, as Vice-president—Engineering, Bucyrus-Erie Company . . . *James B. Prigoff*, '47, as Vice-president—Marketing, Rosenau Brothers, Inc. . . . *John G. Truxal*, '47, as President, Instrument Society of America;

Lynwood O. Eikrem, '48, as Vice-president—Marketing, Applied Research Laboratories, Inc. . . .

Robert G. Loewy, '48, as Chief Scientist, U.S. Air Force . . . *James W. Spalding*, '48, as Manager—Chemical Sales, New York District, U.S. Steel Corporation;

Elwyn E. Winne, '48, as President, Polymer Chemicals Division, W. R. Grace & Co. . . . *Leonard F. Newton*, '49, as Vice-president, Opinion Research Corporation . . . *Paul A. Lobo*, '50, as Executive Assistant to the President, Continental Oil Company;

George F. Nez, '50, as Director, Program for Master's Degree in City and Regional Planning, Kansas State University . . . *Colonel Kenneth B. Cooper*, '51, as Assistant Director, Army Reactors, Division of Reactor Development and Technology, Atomic Energy Commission . . . *James W. Graham*, '52, as Technical Group Leader, Adams-Russell Company, Inc.;

Gordon M. Bell, '53, as Senior Scientist, Alumina and Chemicals Division, Alcoa Research Laboratories . . . *Peter Affeld*, '55, as Administrative Vice-president, Colorado Oil and Gas Company . . . *John W. Blake*, '55, as Assistant to the Director, William F. Clapp Laboratories, Battelle Memorial Institute;

Bertram Newman, '55, as President, Clavier Corporation . . . *Dr. Harold W. Williams*, '55, as Assistant Psychiatrist, McLean Hospital, Massachusetts General Hospital;

Sandra B. Cleveland, '57, *Charles A. Eckert*, '60, and *Bert L. Zuber*, '63, respectively, as Visiting Assistant Professor of Mathematics, Assistant Professor of Chemical Engineering, and as Assistant Professor of Information Engineering, University of Illinois.

(Continued on page 9)

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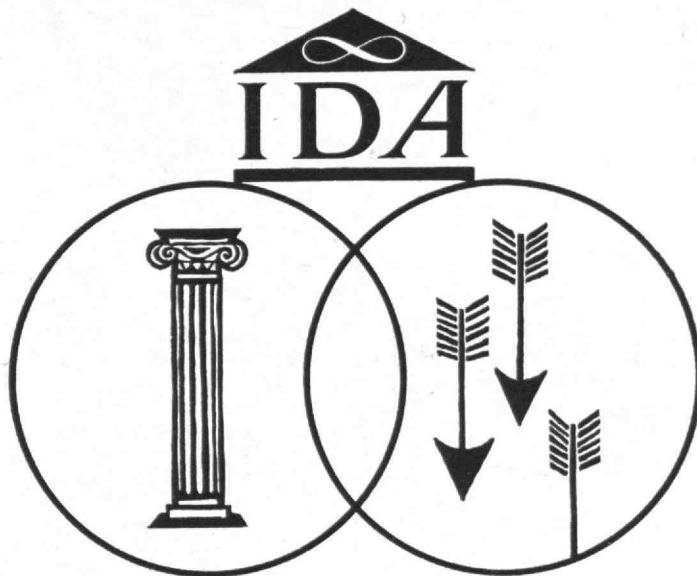
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How do you measure up to these men? (Find out)

The man in the middle is Eddie Felsenthal from Memphis. Eddie, who was just elected President of New England Life's 63rd Career Underwriting Training School, stands 5' 6". Flanking him are two upstanding members of the school—Bob Kennedy from Denver on the left (6' 6"), and Ralph Carroll of Portland (6' 7").

The Career Underwriting Training School is just one example of the superlative training all New England Life newcomers receive—both on the job, and in the home office. Actually, at New England Life, learning is a never-ending business. And our students come in all sizes.

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Arthur C. Kenison, '19, Boston

Stanley W. Brown, '36, South Hadley



INDIVIDUALS NOTEWORTHY

(Continued from page 6)

Life Scientists

President George W. Beadle of the University of Chicago will speak at the dedication of the new building for the Center for Life Sciences at M.I.T. on December 3, at the conclusion of an international symposium of which Dean Jerome B. Wiesner of the School of Science will be chairman.

The symposium will bring outstanding scientists to the campus to discuss the future of studies in basic patterns of organization of living organisms at different levels of sophistication, including molecular and cellular patterns, systems physiology, and the application of the life sciences to human problems.

At the opening session, December 2, chaired by Professor Salvador E. Luria, the speakers will be Drs. Francis H. C. Crick of the Medical Research Council for Molecular Biology in Cambridge, England; Daniel E. Koshland, Jr., of the University of California (Berkeley);

and Tracy M. Sonneborn of the University of Indiana.

Professor Patrick D. Wall will be chairman of the second session and addresses will be given by Drs. John Z. Young of University College (London); Vincent G. Dethier of the University of Pennsylvania; and Theodore H. Bullock of the University of California (Los Angeles).

Dr. A. Baird Hastings, of the Scripps Clinic and Research Foundation (La Jolla, Calif.), will address a banquet that evening on "Molecular Medicine."

Professor Samuel A. Goldblith, '40, will be chairman of a third session the morning of December 3, and the speakers will be P. Ritchie Calder of Edinburgh University, Dr. Clement L. Markert of Yale University, and Dr. Roger Revelle, Director of the Center for Population Studies at Harvard University.

The Center for the Life Sciences will occupy the new Whitaker building and the Dorrance building and integrate work of the Departments of Biology and of Nutrition and Food Science without destroying their autonomy.

Hunsaker Professor

Arthur Earl Bryson, Jr., is at M.I.T. this year on leave from Harvard University as the Jerome Clarke Hunsaker Visiting Professor of Aeronautical Engineering, and will give the annual Minta Martin Lecture, an event always of interest to aeronauts.

Professor Bryson received his degrees from Iowa State University and the California Institute of Technology and was in industry for two years. He joined the Harvard faculty in 1953 and in 1961 at the age of 35 became the Gordon McKay Professor of Mechanical Engineering. His early interests were in transonic airflow and aerodynamic heating, and he has concerned himself more recently with rocket trajectory optimization and the application of computers to the optimization of flight vehicle control systems. He served in the Navy in World War II.

The Hunsaker professorship honors Jerome Clarke Hunsaker, '12, the founder of the M.I.T. Department of Aeronautical Engineering, which is now the Department of Aeronautics and Astronautics.

(Continued on page 10)

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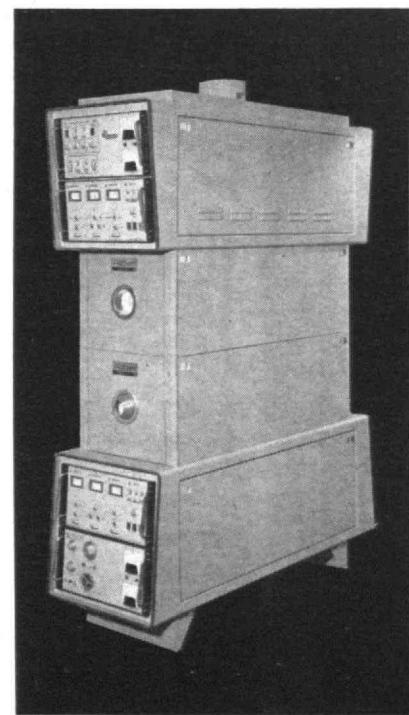


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(Continued from page 9)

To Be Professor

Robert H. Rediker, '47, leader of the Applied Physics Group in Lincoln Laboratory's Solid State Division will become professor of electrical engineering at M.I.T. next July 1.

Dr. Rediker's group was one of the first in the country to obtain laser emission from gallium arsenide. He also has contributed to development of magnetically tuned semiconductor lasers, the discovery of laser action in lead salts and pressure tuning of these lasers to yield coherent radiation far into the infrared, and the development of optically excited and electron-beam-excited bulk semiconductor lasers.

Except for a year at the University of Indiana, he has been associated with M.I.T. since receiving his doctorate in 1950. He is a Fellow of the American Physical Society and the Institute of Electrical and Electronic Engineers.

S. D. Zeldin: 1894-1965

Samuel Demitry Zeldin, Associate Professor of Mathematics, Emeritus, died November 2 in Cambridge. He became an instructor at M.I.T. in 1919 and continued to teach even after his retirement in 1960 until March, 1964.

"Professor Zeldin will be remembered particularly for his great kindness and warmth," said President Julius A. Stratton, '23, when notifying the Faculty. "During his long career of teaching at M.I.T. he always had a deep interest in students and was friend and adviser to many. He was active in developing our mathematics instruction for both freshmen and sophomores and was for many years in charge of sophomore mathematics. In research, he was especially involved in the theory of continuous groups."

Professor Zeldin was born in Russia and was graduated from the Real School in Orsha in 1915. In the United States, he received his doctorate in mathematics from Clark University in 1917. He taught at Olivet College, Olivet, Mich., and at the University of Hawaii.

He is survived by his wife; two daughters, Mrs. Jacqueline Z. Colby, assistant to the head cataloger of the M.I.T. Libraries, and Mrs. Phyllis Chait; and six grandchildren.

Honors to Alumni

Recipients of recent awards and similar distinctions have included:

W. Maxey Jarman, '25, the "American Churchman of the Year" award by the Lay Associates, Southern Baptist Theological Seminary . . . *Gordon S. Brown*, '31, the degree of "doctor technicus, honoris causa" by the Danish Technical University, Copenhagen, and membership in the National Academy of Engineering . . . *Alfred C. Schroeder*, '37, the David Sarnoff Gold Medal;

James C. Wei, '54, the Award in Petroleum Chemistry by the American Chemical Society . . . *John V. Harrington*, '58, a citation for "Outstanding Professional Achievement" by The Cooper Union . . . *Captain John D. Regenhardt*, '62, the Commendation Medal by the U.S. Air Force.

(Concluded on page 13)

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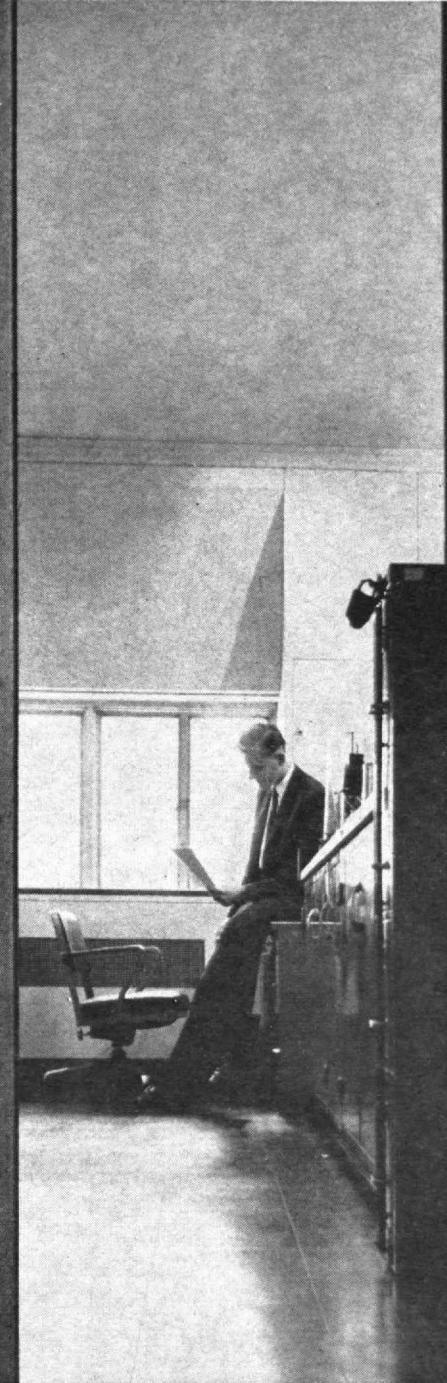
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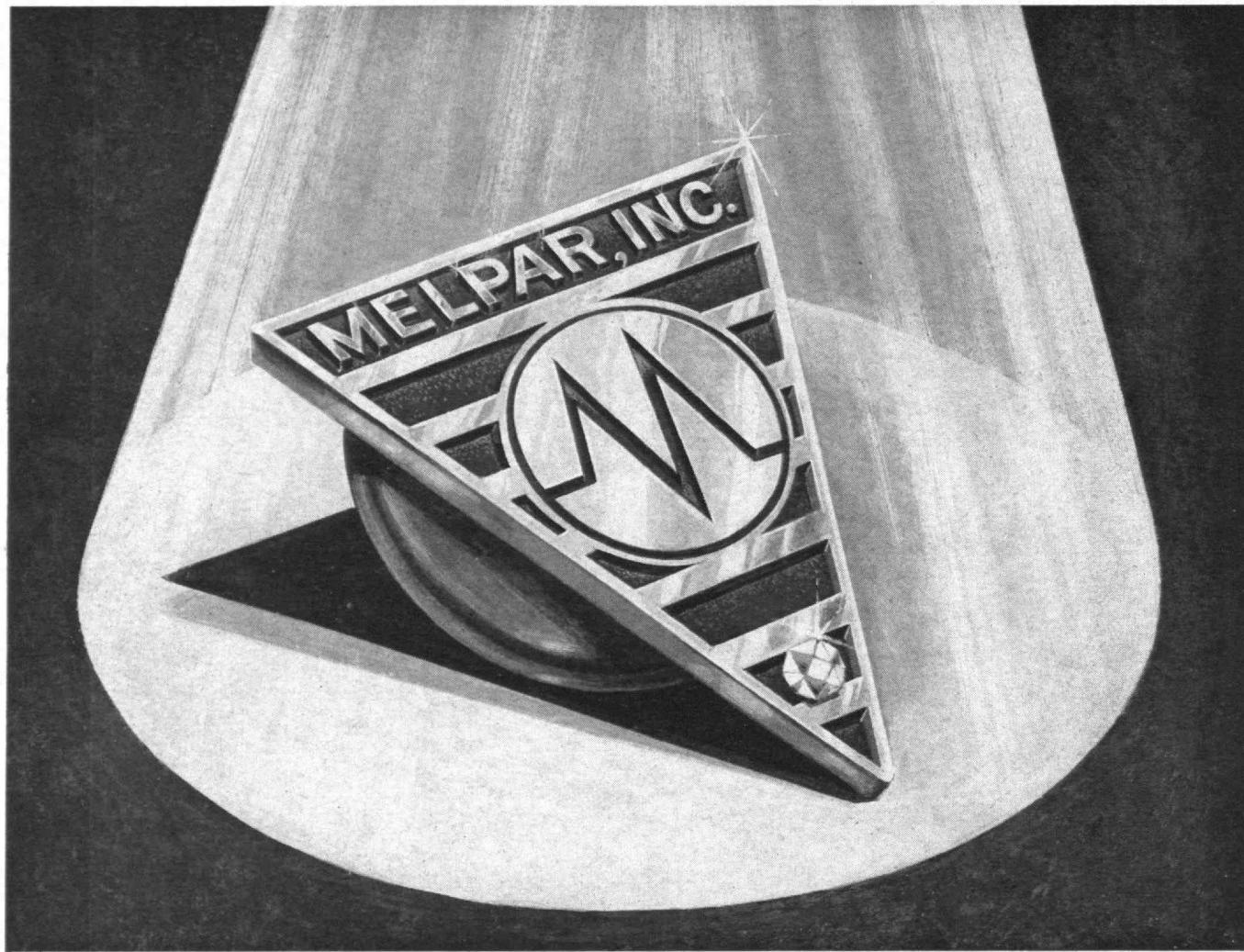
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I NDIVIDUALS NOTEWORTHY

(Concluded from page 10)

In Administration

Walter L. Koltun, '48, has been appointed Special Assistant in the Office of the Vice-president and Secretary of the Institute. Dr. Koltun will be responsible for co-ordinating and providing staff services to the Corporation Visiting Committees and for assistance to senior officers of the Institute in the development program of M.I.T.

Dr. Koltun received his S.B. degree in quantitative biology and a Ph.D. in biochemistry at M.I.T. in 1952. From 1953 to 1955 he was an officer in the U.S. Army Medical Service Corps, in the Biochemistry Department of Walter Reed Army Institute of Research. In 1958 he received a Travel Award of the American Society of Biological Chemistry.

He has served the National Science Foundation in the Office of Science Resources Planning, as Program Director of the Molecular Biology Section, and as a consultant on atomic models.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

(Act of October 23, 1962:

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edited by Morton F. Kaplon

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MATERIALS RESEARCH IN A NEW CENTER

An interdisciplinary laboratory is advancing M.I.T.'s educational program for both scientists and engineers

By Robert A. Smith | Director of the Center for Materials Science and Engineering

A new phase in the development of research and teaching in Materials Science and Engineering at M.I.T. began this fall with the official dedication and opening of the Interdisciplinary Laboratory of the Center for Materials Science and Engineering. The building has been named the Vannevar Bush building in recognition of the outstanding contributions to science and engineering and to their utilization by the Honorary Chairman of the M.I.T. Corporation.

For five years or so plans were afoot for the new laboratory. Then came the annoying and noisy time of pile driving on the old main car park site to the north of the central dome. Everyone was glad when it was over—not least the engineers responsible for the operation, for it was a tricky one, which at one stage succeeded in raising the main M.I.T. building on that side more than an inch! Fortunately it has settled back again. Then came the real visible signs of aboveground structure in the early spring of 1964 and the building was virtually completed by June of this year.

Materials science and engineering has a long and honorable history at M.I.T. The Departments of Mechanical, Electrical, and Chemical Engineering have been studying for many years the properties of the materials used in the multitude of processes with which they have been concerned. These materials have mainly been traditional metals, glasses, plastics, ceramics, etc., but recently new materials such as semiconductors have been added. On the other hand the Departments concerned with basic science, especially those of Physics and Chemistry, have for many years had as an important part of their program fundamental studies of the cohesive properties of solids and of the phenomena associated with conduction of electricity and heat. Optical, magnetic, and various other properties have been studied, too, and these investigations have given rise to

some of the most exciting new developments in physics—and to what is generally called Physics of the Solid State. The study of materials has now also permeated all aspects of engineering, and there is hardly a department in the Schools of Science, Engineering, and Architecture which is not involved to a considerable extent in materials research and teaching.

To give a focus for all this activity the Center for Materials Science and Engineering was created. As an important part of the Center, the Interdisciplinary Laboratory was planned and is now in operation. Materials research lends itself particularly well to an interdisciplinary approach, as has been appreciated in a few of the great industrial and government research laboratories. The interaction between, for example, chemists, physicists, and metallurgists has been most fruitful in some outstanding industrial developments such as the transistor. Until quite recently, however, this interdisciplinary approach was not much used in academic research. It is mainly with the object of encouraging it, and to meet the need for interaction between Faculty and students from different disciplines, that the new laboratory has been built. It was made possible through a happy combination of support from the Second Century Fund of M.I.T. and the Advanced Research Projects Agency, with special assistance in financing from the Alfred P. Sloan Foundation of New York.

The new building provides excellent research facilities and has some novel features. Clean conditions are absolutely essential for successful materials research, so the whole laboratory is air-conditioned. Laboratories have no windows and are artificially lit, giving the minimum opportunity for dirt to enter, the incoming air being filtered. A few specially clean rooms have also been included. Generous office accommodation has been provided so that workers need not spend all

their time in artificial light. (The special features of the building are described on page 18.) Architecturally the building fits satisfactorily into the M.I.T. complex, joining up as a north façade for the main building, yet it looks modern. In trying to achieve this the architects faced no small problem and most admit that they have solved it in both a practical and aesthetically satisfactory manner.

While the excellent research facilities provided by the new building are of the greatest importance to individual Faculty members and their students, the building would fail in its main function if this were all. (It would merely provide additional space for a number of extra research groups.) The laboratory also provides a number of central facilities for preparation, purification, and evaluation of materials. These central facilities have always been regarded as the cement which binds the laboratory together. The research staff of the laboratory is made up of fairly small groups, each consisting basically of one or possibly two professors with their students (mainly graduate) and possibly one or two post-doctorals. A large number of such small units could not be bound together without a common interest and common use of facilities. Equipment for materials research is usually quite expensive and the only way to provide some of it in an academic environment is through centralization. Such central facilities as have been provided in the new building are not intended for exclusive use of the groups housed in the building although it is anticipated that they will be the main users.

There are several ways of setting up such central facilities. One way is to have a single organization under the direction of a very experienced head, whose experience should have reached into a great variety of techniques, backed up by a skilled technical staff to serve the research staff. This method has been successfully employed in a number of industrial research laboratories, but is not well suited to an academic laboratory. An alternative is to provide special facilities by means of a number of groups, each under the direction of a professor who is encouraged to provide a service while also using the equipment for his own research program. There are obvious difficulties in this method but we have been fortunate in finding Faculty members keen to try to make it work, and this is the method we have adopted. Before discussing in more detail the facilities already provided we shall describe briefly the present research program of the laboratory so that the interaction of research with the central facilities can be more clearly seen.

The research program of the Interdisciplinary Laboratory is supported by a number of government agencies and industrial organizations through individual grants to professors and by a substantial annual grant from the Advanced Research Projects Agency (ARPA), which also has provided for the central facilities. Most but not all of the research groups supported by ARPA are housed in the new laboratory—a few are in close-by accommodation.

The research is varied but falls generally into three

main categories: solid state physics and chemistry, materials of electronic interest, and materials of metallurgical interest. This research program was built up over the past three years and involved groups scattered all over the Institute, most of which have now moved into the new laboratory.

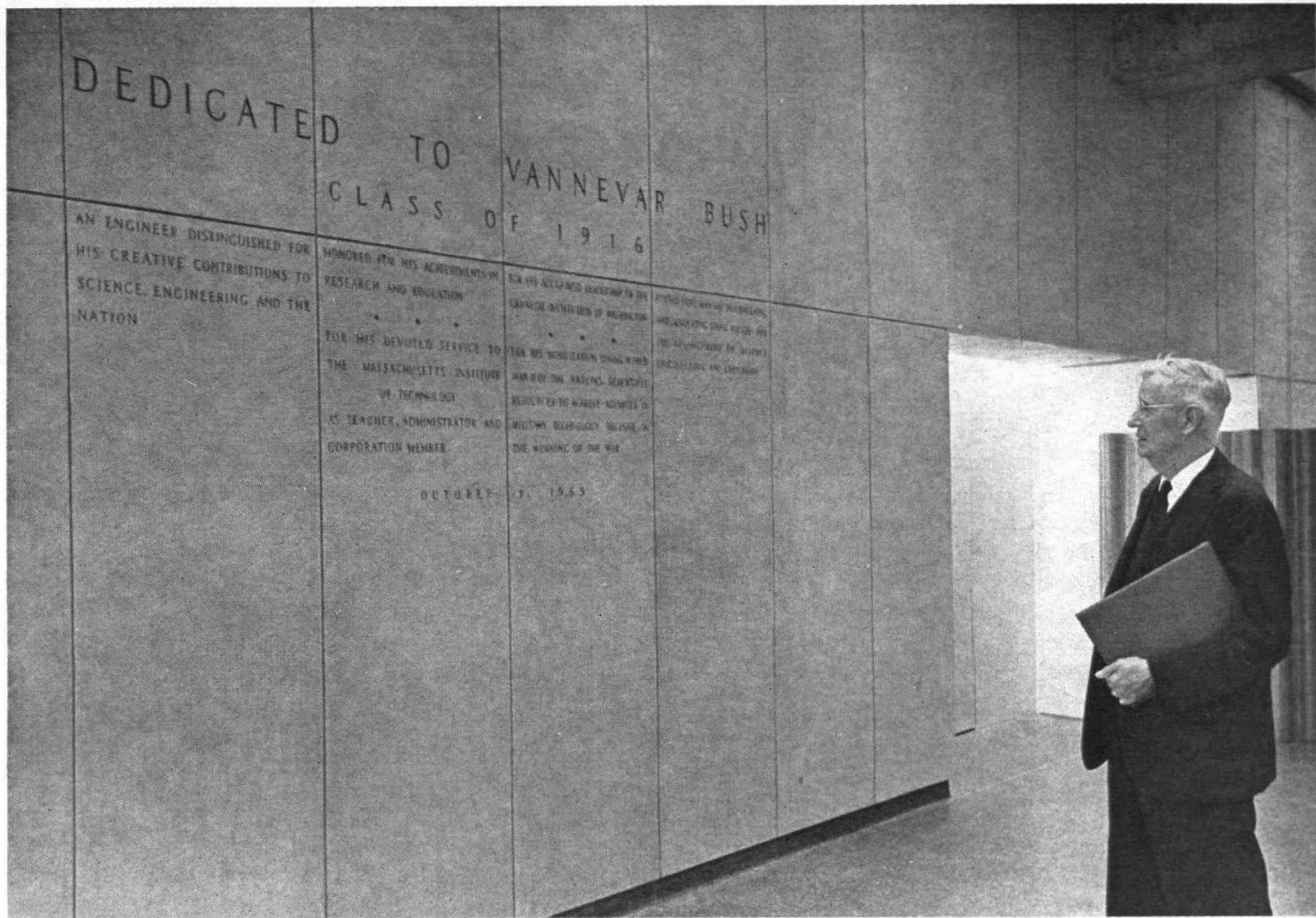
In solid state physics, for example, some fascinating new experiments on the scattering of light from thermally generated sound waves in liquids and solids are being carried out. In addition to giving new results of basic scientific interest, the technique developed gives a new method of measuring the speed of sound at microwave frequencies in transparent solids in any direction, and hence of obtaining their elastic constants. The technique provides a fine example of the use of a laser as a powerful research tool. A combination of high pressure and resonance techniques is also giving a powerful method of studying magnetic phenomena.

The study of matter at extremely low temperatures enables one to understand many phenomena since these are sometimes considerably simplified at such temperatures. Low temperatures also give rise to new phenomena, such as superconductivity. For example absorption of far infrared radiation at low temperatures in semiconductors is being studied with a view to understanding some curious phenomena which occur in material having a considerable quantity of controlled impurity. Ultra-pure metals are also being studied at low temperature, the resulting long electron mean free path giving rise to some interesting effects.

On the metallurgical side, the effect of various treatments on the properties of high-field superconductors is being investigated and at the opposite end of the temperature scale intermetallic compounds with high melting points are being studied. While these studies are aimed at understanding the basic principles involved, they may well lead to the development of materials of great practical importance. Materials which do not have their superconductivity destroyed in high magnetic fields could be of great importance in electrical engineering quite apart from their use in the generation of high magnetic fields.

The search for materials which do not lose their strength at high temperatures is a continuous one; presently available materials fall far below what the design engineer would wish for. A considerable effort in this area, too, is being devoted to the strengthening of materials by various treatments or additions including dispersed precipitates. These studies include basic investigations into the morphology of precipitates and of the factors that determine ultimate strength. Composite materials as well as more elementary materials are under investigation, including ceramics and clays.

In physical chemistry, resonance and high-pressure techniques are being used to study phase changes and x-ray and low-energy electron diffraction methods are being used to examine the arrangement of atoms on the surfaces of solids. This ties up with work on the surface properties of semiconductors, a field of great interest to the electronics industry. Various phenomena as-



Vannevar Bush, '16, in the lobby of the new Center for Materials Science and Engineering during its dedication.

sociated with crystal growth and control of minute impurity concentrations in semiconductors are being investigated. These growth techniques are widely used in the transistor industry but many of them have been developed empirically and the basic physics and chemistry are not fully understood. In the area of electronic materials some of the work is oriented towards the development of new devices but is mainly concerned with new materials whose magnetic, electrical, and optical properties are under investigation.

On the metallurgical side there are also a number of studies of structure of alloys and intermetallic compounds using x-rays and neutron diffraction. The effect of electronic band structure on crystal form and order is also under investigation.

The combination of theory and experiment plays a vital part in all these investigations. Provision has been made in the laboratory office space for theoretical groups, a number of which have joined the laboratory from at least three different departments. By working closely together it is hoped that their interaction may result in new light being shed on a number of the more difficult problems that remain to be solved both in the fundamental physics of materials and in their use.

Some of the more fundamental aspects of materials research are housed in the new laboratory, but the pro-

gram represents only a fraction of the large effort devoted to materials research at M.I.T. One of the services that the Materials Center provides for the Institute is to prepare an annual report on Materials Science and Engineering at M.I.T. This gives a broad picture of the total M.I.T. research program in this area and is widely read.

One of the difficult problems which arises in an academic community made up of a large number of individual research groups is that of communication. The Center is striving to improve communication by arranging informal discussions between groups with similar interests but from different disciplines and by means of colloquia and lectures. Day-to-day contact of workers from different disciplines in the new laboratory will also help. It is, however, to the central facilities that we are looking for the main force that will bind the various groups together.

The central facilities include, as we have already indicated, equipment for preparation and evaluation of materials. The preparation facilities are divided into four groups, three of which concentrate on highly pure single crystal material and the fourth on composite materials including ceramics, clays, etc. For single crystal work, purification to a very high degree is closely linked

(Continued on page 42)

A modern new laboratory building blends harmoniously with the central group of original M.I.T. structures

An Architectural Goal Achieved

A Report by Elwood W. Schafer, '32

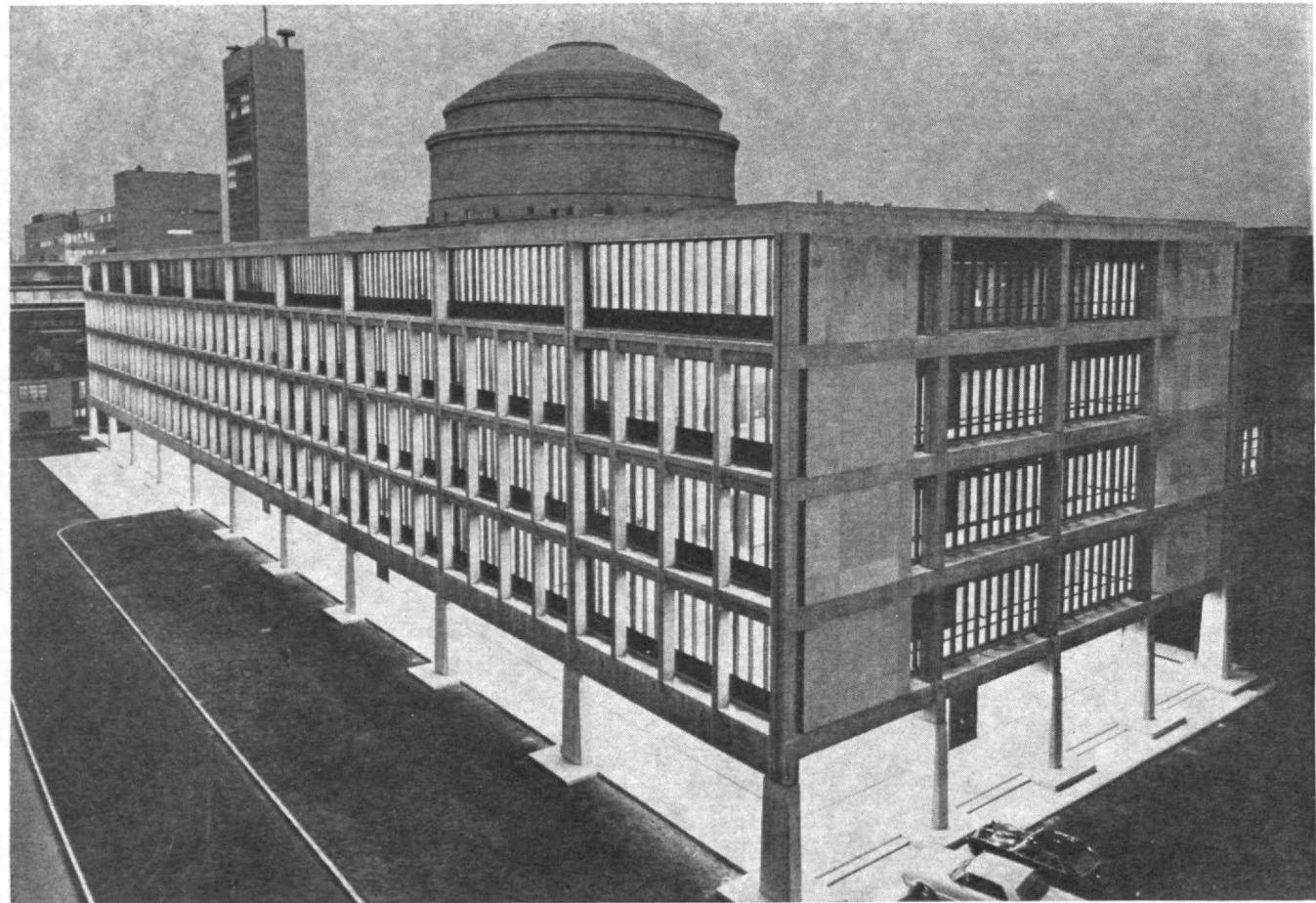
The Center for Materials Science and Engineering is within the central group of original M.I.T. buildings and blends harmoniously with them. Its architects met the challenge of this architectural objective with modern and economical construction techniques, while also recognizing the need to provide for growth and unpredictable change in a building to be used as a laboratory for research and teaching.

Skidmore, Owings and Merrill designed this structure largely around five major vertical service cores which supply all utilities and power to groups of six internal laboratories at each floor level and two smaller service cores which supply laboratories in groups of two at the ends of the central section of the building. The design characteristics, consequently, can be most readily described from the inside out.

The vertical service cores are 9- by 14-foot shafts, open from the building service machinery room on the ground floor to the fan rooms on the fifth floor, and provide adequate space for vertical lines that carry hot and cold water, drains, gas, compressed air, exhaust ducts from the chemical hoods and heat removal canopies, and several varieties of electric power.

Six laboratories clustered around each service core at each floor level have access to these supply lines through panels, which have pre-punched knockouts for the addition of lines without drilling through concrete walls. The exhaust duct panels can be used both for air-conditioning outlet grills and hood exhaust ducts. Electrical power enters each laboratory from the service core in a 3- by 5-inch metal raceway at bench height, and separate circuits can be carried around all four walls.

(Continued on page 45)



This \$6,000,000 building, parallel to and immediately north of the main building, adds 150,000 square feet to M.I.T.'s space.

NEW MATERIALS IN THE MAKING

*By using fibers and crystals called 'whiskers'
we may achieve composites of unusual strength*

By Albert G. H. Dietz, '32

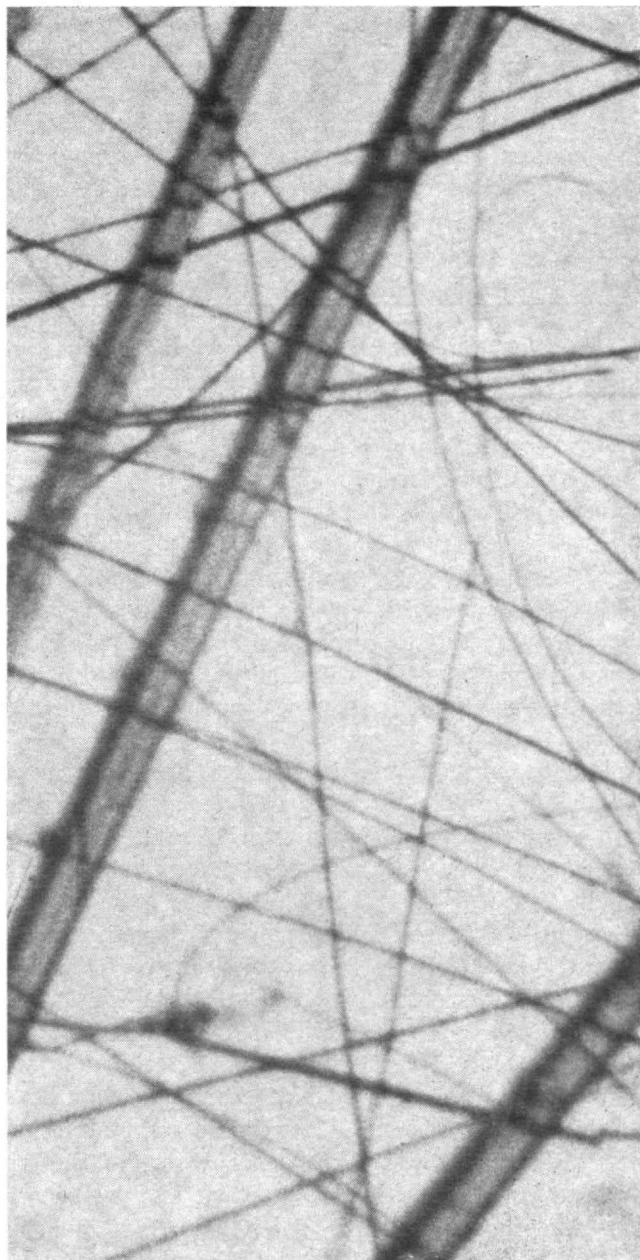
Professor of Building Engineering and of Civil Engineering, M.I.T.

Materials in the form of fibers are often vastly stronger than the same materials in bulk forms. Glass fibers, for example, may develop tensile strengths of 1,000,000 pounds per square inch or more under laboratory conditions, and commercial fibers attain strengths of 400,000 to 700,000 psi, whereas massive glass breaks at stresses of a few thousand pounds per square inch. The same is true of many other materials, whether organic, metallic, or ceramic.

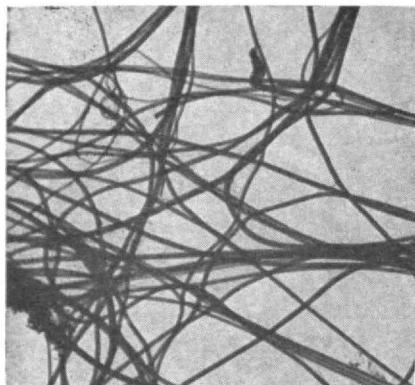
For many applications in which strength and stiffness are important, the ratios of these values to the density of the material may be even more significant, especially in space applications and others where weight is important. It is interesting to note, therefore, that some of the light elements and their oxides or carbides not only have exceptionally high absolute values of tensile strength and elastic modulus, but their ratios to density are also most favorable. Boron and beryllium possess high stiffness on a density basis, and boron, glass, and fused silica are among the strongest on the same basis, but these materials are generally not ductile and do not elongate much before failure.

Still stronger and stiffer forms of fibrous materials are the unidirectional crystals called "whiskers." Male animals are not the only source of whiskers. Medieval silversmiths discovered that if they stroked and heated the surfaces of silver objects, fine filaments or whiskers would grow from the surface. Although the silversmiths did not know it, they were anticipating a development which is now being actively pursued by scientists and engineers searching both for greater insight into the structure of matter and for materials having extremely high strength and stiffness.

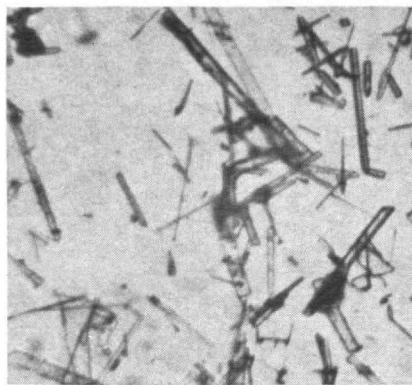
Under favorable conditions crystal-forming materials will crystallize as extremely fine filamentous single crystals a few microns in diameter and virtually free of the imperfections found in ordinary crystals. The theoretical strengths of crystalline materials are much higher than the strengths achieved in practice. Iron, for example, should have a strength of 2,900,000 pounds per square inch, but the commonly employed



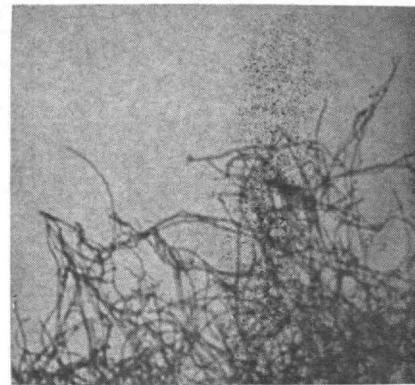
Fibers of silicon carbide wool (fine lines) are two microns in diameter, as compared to 10 microns for the diagonal glass fibers.



Sapphire wool is experimental material of fibers less than a micron in diameter.



These milled or chopped sapphire whiskers are tiny flat ribbons like movie film.



Cobwebs such as silicon monoxide may have strengths of 10 to 50 million psi.

structural steels attain about 75,000 to 100,000 psi. The great disparities in strength are caused largely by internal dislocations in the crystalline structure, and in ductile materials like metals the dislocations can easily move about, allowing the portions of the crystal to shift with respect to each other. In non-ductile materials like ceramics the atomic structure is such as to inhibit easy motion of the dislocations, but they act as stress concentration points, including steps and breaks at the surfaces of the crystals, and thus bringing about premature failure.

In whiskers the dislocations are either absent or, in any event, the diameters of the whiskers are so small as to prevent ready motion of the dislocations. The surfaces of whiskers are also characteristically extremely smooth, without the surface imperfections found in more massive forms. Whiskers, consequently, are far stronger and stiffer than the same material in bulk form. (Some men undoubtedly feel that they grow whiskers of this kind.) These whiskers so far have been produced principally on the laboratory scale, although silicon carbide is reported to be available in larger quantities. Lengths are mainly fractions of an inch and costs are high compared with bulk materials and other filaments. But the potentialities are such as to warrant considerable research and development.

Explanations for the high strength of fine fibers center largely about the theory of flaws enunciated by Griffith and extended by other investigators. Simply stated, the theory postulates that in fine fibers the probability of a serious flaw occurring is much less than in more massive sections and, consequently, the strength is higher, more nearly approaching the theoretical strength of the material. Other explanations postulate that, in the process of drawing fine filaments, such flaws as do exist (cracks, for example) are oriented in the direction of drawing, parallel to the axis of the fiber, and consequently have much less effect than if they were at right angles to the tensile stress. In high polymers, the molecules are oriented in the direction of drawing, thereby greatly increasing the strength in that direction. It is postulated that a similar ordering effect occurs in other materials.

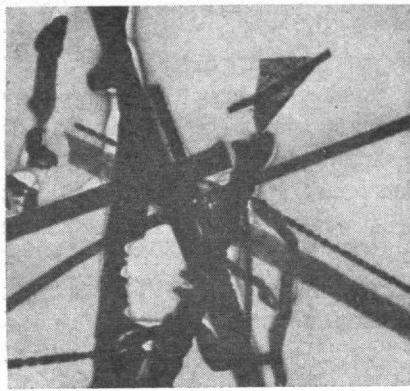
Fine filaments or fibers by themselves have limited engineering use. They need support, something to hold

them in place in a structure or device. This is accomplished by embedding the fibers in a continuous supporting matrix sufficiently rigid to hold its shape, to prevent buckling and collapse of the fibers, and to transmit stress from fiber to fiber. The matrix may be, and usually is, considerably weaker, of lower elastic modulus and of lower density than the fibers. By itself it would not withstand high stresses. When fibers and matrix are combined into a composite, a combination of high strength, rigidity, and toughness frequently emerges that far transcends these properties in the individual constituents.

The forms in which fibers can be employed in composites are numerous, and draw upon the long experience of textile technology for help and guidance. The simplest, and in many ways one of the most versatile and consequently most widely employed, is the mat of short-length fibers laid down in a random pattern. This is adaptable to a considerable number of uses and is the general-purpose member of this family of composites. Strength is approximately the same in all directions; that is, the material is essentially isotropic in its own plane. The strength and elastic modulus are only moderately high in any one direction because only a small proportion of the total number of fibers is oriented approximately in that direction.

Woven fabrics provide greater strength in the directions of the yarns, but the material is no longer isotropic: It has properties proportional to the numbers of yarns in two mutually perpendicular directions, and is orthotropic. This is reflected in the properties of composites incorporating such woven constructions. Many types of weaves are employed—square, basket, satin, and others—practically all of the patterns that have evolved in textile technology.

Highest strength in one direction is achieved when fibers in the form of continuous filaments are laid down parallel to each other in a unidirectional pattern. This permits the greatest fiber-packing density of any of the various configurations. The highest strength and elastic modulus occur in this longitudinal direction, but the strength in the transverse direction is essentially the strength of the matrix, and the elastic modulus, while higher than that of the matrix alone, is lower.



Submicron sapphire blades. Electron micrographs from Thermokinetic Fibers, Inc.

Of the many fibers and filaments available, the most widely employed in fibrous composites at present is glass. This has average strengths ranging from 500,000 to 700,000 psi and elastic moduli of approximately 10,000,000 to 12,000,000 psi, although experimental glasses go as high as 15,000,000 psi.

The most commonly used matrices are synthetic resins, of which the unsaturated polyesters, epoxies, and phenolics are most widely employed. The synthetic resin matrices typically have tensile strengths ranging between 5,000 and 10,000 psi and elastic moduli less than 1,000,000 psi, many in the vicinity of 500,000 psi or less.

Because of the high temperatures frequently encountered and because higher-modulus matrices are often desirable, there is considerable activity in the development of metal matrices combined with the higher-temperature resistant fibers. Silica, graphite, and carbon in various metals, such as aluminum; tungsten in tungsten-based alloys or in silver; alumina fibers in silver; and many others are undergoing active development.

Unlike many plain materials which are first manufactured as stock sheets, bars, or profiles and are then fabricated into final form, parts made of fibrous composites are customarily fabricated directly from the basic constituents. Properties of the article are strongly influenced by the fabrication process. The commonly employed glass fiber-resin composites are generally fabricated by hand lay-up, preforming, spraying up, or filament winding.

For the pavilions erected for the U.S. Exhibition in Moscow, hexagonal canopies 20 feet high and 16 feet in diameter on hollow columns were made by hand lay-up of random glass fiber mat and polyester resin. Thickness was varied from one-sixteenth to one-quarter inch by varying the number of layers of material. In spite of the thin sections in these large sizes, strength was ample to withstand 60 mph winds.

The "House of the Future" has 8-x16-foot cantilevered hollow structural *monocoque* shells that were made of woven roving fabric and polyester resin 0.3 in. thick. They were hand-laid on simple forms and cured inside an evacuated flexible blanket at moderately elevated temperatures.

Automobile parts have been made by spraying chopped fiber and resin against a form placed on a revolving table, then molding the preform in a heated press.

To make a large tank, glass fiber rovings have been drawn through a resin bath and wound onto a rotating mandrel. Various layers may have the filaments oriented at different helix angles, including circumferential windings. A number of rocket casings are fabricated by this technique.

Fibrous composites play a prominent part in some of the vital portions of rockets and space vehicles. One outstanding example is the nozzle of the solid-propellant rocket, 156 inches in diameter, that was recently test-fired in Georgia. It is 19 feet high, 19 feet in diameter at the exit cone, and weighs 20,000 pounds. The hot flame of this rocket engine develops 3,000,000 pounds of thrust.

The nozzle units are assemblies of erosion and heat-resistant plastic materials reinforced with structural glass fiber laminates and assembled into a steel shell. Carbon, graphite, and high-silica tapes are employed in different parts of the nozzle for highest resistance to erosion by the high-velocity and high-temperature gases. Each tape is impregnated with highly substituted ring-structured phenylaldehyde resin that has high heat resistance and low shrinkage.

Bias-cut carbon fabric tape forms the entrance cone, from the point where the nozzle is attached to the rocket case to the upper part of the constricted or throat area. The throat section itself is made of graphite fabric tape wrapped shingle fashion at angles of 60, 45, and 30 degrees. The exit cone portion consists of carbon and high-silica tapes with the carbon closest to the throat, and the silica forming the rest of the nozzle. Carbon, graphite, and high-silica tapes are preimpregnated with an epoxy resin.

A partial steel shell of 18 per cent nickel maraging steel extends from the attachment point at the case, past the throat section and part way up the exit cone. In addition to the support thus provided, each tape-wound section is structurally reinforced with a bi-directional glass cloth polyester resin composite. This lamination is further locked in by circumferentially wound glass rovings at the smallest diameter of the nozzle.

Parts of the nozzle are assembled to each other with a zinc chromate filler, machined and bonded to the shell; an external layer of bi-directional laminate is applied over part of the steel shell and part of the exit cone, and finally glass fiber rovings are wrapped around the throat and the aft end of the shell.

This is not only a combination of composite materials chosen to meet varying conditions in different parts of the nozzle, it is a complex composite structure. In the test it behaved well. The internal surface was smoothly eroded as expected, but there were no signs of distress.

Heat shields for re-entry vehicles such as the Mercury and Gemini capsules also are being fabricated of fibrous composites. Glass, silica, and graphite fibers in woven, tape, or other forms are embedded in resin matrices such as high-temperature phenolics to provide materials with superior ablation and shielding characteristics because of the high energies required to erode the materials and the low thermal conductivities which retard the rate of heat flow to the interior of the capsule.

In composites, the whiskers described above are of great potential interest as high-strength, high-modulus reinforcements. In metallic matrices fine whiskers—hard, strong, and stiff—act as effective blocks to the migration of discontinuities, thus greatly increasing the strength of the metal and increasing its resistance to deformation at elevated temperatures.

In other matrices such as epoxy resins, laboratory experiments show similar large increases in strength. Only partially successful tests of specimens with as little as 14 per cent aligned sapphire whiskers developed over-all strengths of 113,000 psi, or 750,000 psi in the whiskers themselves.

The small diameters, short length, and extremely high strengths and moduli of whiskers pose some problems. Handling and aligning the fibers is not easy. The shear strength of the matrix and the strength of the bond to the whisker must be sufficiently high to make their joint behavior effective, especially at the end of a whisker where high concentrations occur. The whisker must not pull out of the matrix.

A technique for incorporating whiskers in a metallic matrix is to grow them directly in the metal by the controlled unidirectional solidification of an alloy. This has been accomplished with magnesium-tin, and copper-chromium, resulting in some platelike and some fibrous whiskers formed in the matrix.

Analyzing the properties and behavior of plain materials is no simple task. When several materials are combined and expected to behave in concert the problem becomes exceedingly more complex. The analysis of internal stresses, or micromechanics, becomes an arduous task for which the theory is far from complete. Because of this, much of the present approach to design of composites is at least partly empirical. Fibrous composites are no exception.

Strength of fibers is a statistical phenomenon, as it is with other materials. In a bundle of fibers, some are inherently stronger than others, and some have somewhat higher or lower elastic moduli. In a bundle sub-

jected to a tensile load, even if all fibers are perfectly straight to begin with and all are strained equally, the higher-modulus fibers carry higher stresses than others, but even if all are of equal elastic modulus, the weaker fibers reach the ultimate and break first, thus throwing the total load on a smaller number of fibers. As the load is increased others break, and the process continues until a critical point is reached at which the effective strength of the remaining fibers no longer is adequate, even though a few exceptionally strong fibers are not yet at their breaking points, and failure occurs. The maximum load that the bundle can carry is a statistical function of the strengths of the individual fibers.

The picture becomes more complex if the fibers are not all straight to begin with, so that some are more highly stressed than others. This is true in a twisted yarn, for example, in which the spiral of the outer filaments of the yarn is at a greater angle than the central filaments. Even in a bundle of presumably parallel filaments it is not practically possible to obtain perfect alignment. Different stress levels in the individual fibers are therefore superimposed upon different inherent strengths.

When the fibers are embedded in a matrix, the matter becomes still more complex. For a single circular fiber in a circular tube of matrix it is possible to carry out an exact elastic analysis of stress parallel to the axis of the fiber. When several or more fibers are present, the interactions among them become so complex that an exact solution becomes hopeless from a practical standpoint, and approximations must be employed, or reliance placed upon empirical tests.

We face even greater complexity when it is realized that at the boundary region between the fiber and the matrix there may in fact be a third constituent, a boundary layer of indefinite thickness and variable properties where the matrix and fiber interact upon each other. For example, a polymeric matrix may be a random aggregation of molecules, but as these approach the surface of the fiber they may be more and more highly ordered, thus bringing about a change in properties. The simple two-phase picture of fiber and matrix may therefore be altered. Nevertheless, in the direction of the fiber a good approximation often is the simple rule of mixtures that says that the properties of the composite are the sum of the properties of the individual components multiplied by their fraction of the total volume. The composite elastic modulus, for example, can often be closely approximated by this rule.

At right angles to the direction of the fiber the simple rule of mixtures breaks down. The strength in this direction may in fact not be much different from the strength of the weakest constituent—the weakest link hypothesis—and this is usually the matrix. However, stress concentrations near or at the boundary between matrix and fiber caused by their markedly different elastic properties may lead to failure at that point. The composite elastic modulus in the transverse direction is a complex function of fiber geometry and spacing and of the rela-

(Concluded on page 40)

THE TREND OF AFFAIRS

Dr. Stratton's Retirement

Julius A. Stratton, '23, will retire as president of M.I.T. next June 30. The Ford Foundation has announced his election as chairman of its board of trustees, effective January 1. He will continue, however, to devote full time to his duties at M.I.T. until the end of this academic year. Dr. Stratton became acting president in 1957 and president in 1959, and will be 65 years old next May 18.

"Under Dr. Stratton's leadership, M.I.T. has been advancing on all fronts," Chairman James R. Killian, Jr., '26, of the M.I.T. Corporation, told the press. "It has introduced major innovations in teaching and curriculum development, grown in enrollment, scope, and faculty strength, and carried through a great building program which has transformed the landscape."

"Later there will be appropriate occasions for the M.I.T. community to celebrate in full these achievements of his and to express its gratitude and esteem. He has been an unusually strong leader, bringing to our institution exceptional poise, unity, and sense of direction. We salute the Ford Foundation for its good fortune . . . and wish him another period of achievement."

Dr. Stratton has been a trustee of the Ford Foundation since 1955. As chairman of the board he will succeed John J. McCloy, a former chairman of the board of The Chase Manhattan Bank who has held numerous high government posts.

Student Center Is Dedicated

"The student is the essential reason for our being," President Julius A. Stratton, '23, told the audience at the dedication of the new Student Center last October 9. James R. Killian, Jr., '26, Chairman of the M.I.T. Corporation, announced the naming of the building in honor of President Stratton, and William H. Byrn, Jr., '66, Undergraduate Association President, gave Dr. Stratton a plaque bearing the dedicatory inscription. It noted his "abiding concern for the students of M.I.T."

Associate Dean of Student Affairs Robert J. Holden, who was cited for his role in planning the center, remarked that the quality of a community in which students live must match the quality of their education.

Before the dedication, Dean of Student Affairs Kenneth R. Wadleigh, '43, presided at a luncheon at which Samuel A. Groves, '34, President of the Alumni Association, gave awards to 15 students and Alumni who have served over the last decade as chairmen of student committees formed to plan for the center. They are: John B. Adger, Jr., '66, Eldon H. Reiley, '55, John S. Saloma, 3d, '56, Malcolm M. Jones, '57, Alan M. May, '57, Richard B. Solo, '58, John H. Beynon, '59, Alan B. Shalleck, '60, Kenneth M. Singer, '61, Louis A. Davidson, '64, Frank S. Levy, '63, Walter J. Bradley, '64, Martin H. Stieglitz, '64, Arthur A. Bushkin, '65, and Richard L. Schmalensee, '65.



Even before it was fully furnished, the Student Center became one of the busiest places on campus.

A Good Thing Going?

In a few generations men will merely ingest food, instead of enjoying their meals, if consumers continue to neglect flavor, Henri Cheftel, renowned French food expert warned in the Underwood-Prescott Memorial Lecture sponsored by M.I.T. and Wm. Underwood Company this year.

"The task of supplying victuals to growing numbers of people living in large cities, or moving from one place to another, has led to industrializing the production of foodstuffs, which, as a consequence, are becoming increasingly uniform," Mr. Cheftel said. "Quality in this context, has come to be defined more and more by those characteristics which lend themselves to physical or chemical measurement, and which the manufacturer is able to control with sufficient accuracy; refinements of flavor have been all too often in the background."

Under pricing competition there is a tendency to disregard quality, and the indifference of consumers to flavor makes it difficult for manufacturers to keep standards high, according to Mr. Cheftel. "If we try to find out why the average consumer is not more exacting and 'flavor conscious' than he is, I think we may see in his desire for saving time, work, and even the trouble of thinking—in other words, a certain laziness—one of the main motives of his attitude.

"Once the consumer is persuaded to accept in some cases the idea of foregoing flavor for 'convenience,' he will get into that habit, without stopping to consider what he gains by it; and little by little he will become less attentive to the differences which he thinks are not worth the trouble, until finally he is no longer able to detect them.

"To this he is encouraged, through advertising, by those manufacturers who find it easier and more profitable to direct the consumer's attention to everything but flavor. In the end, however, it is the consumer who pays for appearance, artificial freshness, sophisticated packaging, easy opening containers—and what else?—in place of flavor. It is indeed up to the consumer to be more discriminating in his requirements, or in a few generations' time men will just ingest food, instead of enjoying their meals."

The Underwood-Prescott Memorial Lectureship was established in 1963 by the Wm. Underwood Company to honor a scientist selected annually by M.I.T. for his contribution to the advancement of food science. Mr. Cheftel was honored for his research on bacteriology and the nutritive value of canned foods.

COMSAT Calling

The Communications Satellite Corporation turned to M.I.T. for a chief executive officer and chairman of the board, and General James McCormack, '37, accepted that post effective December 1.

A Vice-president and member of the M.I.T. Corporation, he has supervised the Institute's two largest research units, Lincoln Laboratory and Instrumentation Laboratory. In taking office at COMSAT, a joint industry-government corporation, he is resigning his vice-presidency at M.I.T. and the chairmanship of the Massachusetts Bay Transportation Authority.



TO HANG A WHALE is the unusual assignment given to Robert Elangwe Efimba, '63, by Burns and Roe, Inc., for the American Museum of Natural History in New York. The museum would like to hang a 13-ton model of a blue whale from a single point of the roof of its Hall of Ocean Life. C. DeWolf Gibson (right) of the museum described the engineering problem to Mr. Efimba.

Engineers Back in Class

Fifteen veteran engineers and applied scientists from industry and government are going to school at M.I.T. to catch up on knowledge developed since their own student days. They are taking part in the 1965-1966 Practicing Engineer Advanced Study Program at the M.I.T. Center for Advanced Engineering Study. Ten were enrolled in 1964-1965, the first year of the program. Construction will start early next year on a \$3,000,000 building for the Center and when it is completed, the number of students will increase to 100 a year.

The Practicing Engineer Program is one of several of the Center's activities to help engineers and scientists deal with exploding technological information. The Center was established under a \$5,000,000 grant from the Alfred P. Sloan Foundation and an additional grant from the Office of Education, U. S. Department of Health, Education and Welfare.

"The business of being up to date and informed in technology is not an abstraction in industry," says the Center Director, Professor Harold S. Mickley, '46. "If an organization misses out on some technological development, the result can be devastating. Contemporary industrial history is replete with such case histories."

Companies and organizations nominate for the program men who have a key role in generating new technology within their organizations. Among this year's group are four who already hold doctor's degrees and a senior military officer whose assignment requires evaluation of the nation's complex and sophisticated weapons systems.

VALUES IN VISUAL ARTS

In a formless age of science, artists must re-educate their vision to bring forth a new spiritual structure

By Gyorgy Kepes / Professor of Visual Design, M.I.T.

The following essays by Professor Kepes and Dr. Hoagland are based on their lectures at the Alumni Seminar in September.

Science has opened up immense new vistas, but we shrink from accepting the deeper and richer sense of life uniquely inherent in the new parameters of our Twentieth Century world. Where our age falls short is in the harmonizing of our outer and our inner wealth. We lack the depth of feeling and the range of sensibility needed to retain the riches that science and techniques have brought within our grasp. Consequently we lack a model that could guide us to re-form our formless world.

The formlessness of our present life has three obvious aspects:

First, our environmental chaos, which accounts for inadequate living conditions, waste of human and material resources.

Second, our social chaos—lack of common ideas, common feelings, common purposes.

Third, our inner chaos—individual inability to live in harmony with one's self, inability to accept one's whole self and let body, feelings, and thought dwell together in friendship.

We have, then, three basic tasks before us. First of all we must build bridges between man and nature—construct a physical environment which is on a truly Twentieth Century standard. Second, we must build bridges between man and man—create a new scale of social structure built from progressive common purposes. We must establish a sense of belonging, of interdependence, in order to achieve the teamwork that the first task demands. And, finally, we have to build bridges inside ourselves. Only if each individual can unify himself, so that one aspect of his life will not intercept and cancel another, can we hope to tackle the second task efficiently. Only the man who can work with himself can work with other men.

The building of these bridges—the reintegration of all aspects of our life through Twentieth Century knowledge and power—is our great contemporary challenge,

and in this work the imaginative power of creative vision coupled with sensibilities can have a central role. Artists are living seismographs, as it were, with a special sensitivity to the human condition. They record our conflicts and hopes, and their immediate and direct response to the qualities of the world helps us to establish an entente with the living present.

We may distinguish two fundamental values that the artist can reveal to us. First, we respond to the images of artists because of their completeness; because their harmonies, rhythms, colors, and shapes touch us, and not just on one level or another of our being. As the poet Yeats has put it, they "could not move us at all, if our thought did not rush out to the edge of our flesh, and it is so with all good art, whether the Victory of Samothrace which reminds the soles of our feet of swiftness, or the Odyssey that would send us out under the salt wind, or the young horsemen on the Parthenon that seem happier than our boyhood ever was, and in our boyhood's way. Art bids us touch and taste and hear and see the world, and shrinks from what Blake calls mathematical form, from every abstract thing, from all that is of the brain only, from all that is not a fountain jetting from the entire hopes, memories and sensations of the body." *

In its aspect of many layered but unified experience, participation in a work of art often provides us with deep insight into the wholeness of the world. The physical base outside us and our sensations within us are bridged. Our sensations, feelings, and thoughts march in unison. The analogous relations, transcending both individual human beings and the work of art, become a social fact, connecting man and man through establishing a community of thought and feeling.

The other basic value that an authentic creative work of art offers to us is inherent in the proportion between its fundamental opposites: expressive vitality and formal order.

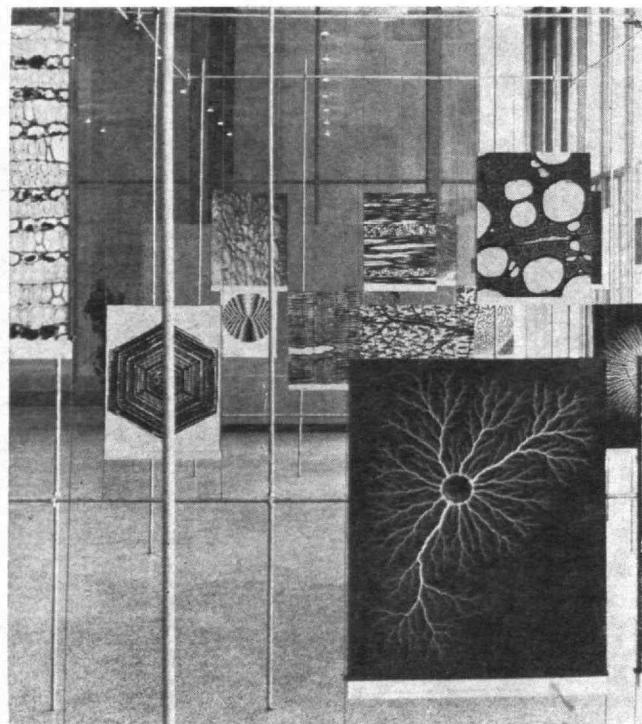
Our history suggests that human progress follows

*From *The Cutting of an Agate*, quoted in *The Creative Process: A Symposium* (Berkeley and Los Angeles, 1952).

from the harmonizing of two opposite tendencies: the tendency on the one hand toward greater sociality and social discipline, and on the other toward greater individual freedom and intensity of life. There is evidence of psychological regression in the sick, whose personalities shrink as they lose the power both to integrate themselves with the world and to open themselves toward it; they retreat to a more vegetative level of existence. If not crushed, exploded or cavitated by the surges of unresolving opposites, a living system is stultified when the disproportion becomes too great.

Motor performance at the animal level, and productive work, the foundations of our social existence, are based upon the alternation of action and repose in a measure corresponding to the natural periods of breathing and neuromuscular effort. The optimum performance is defined by the worker's ability to reach a rhythmic articulation common to the body, the mind, and the task. Very early, men mastered the technique of getting work done by a unison of efforts paced by a strongly rhythmic work-song or chant. Emotional drive, muscular energy, and technical knowledge become parts of a

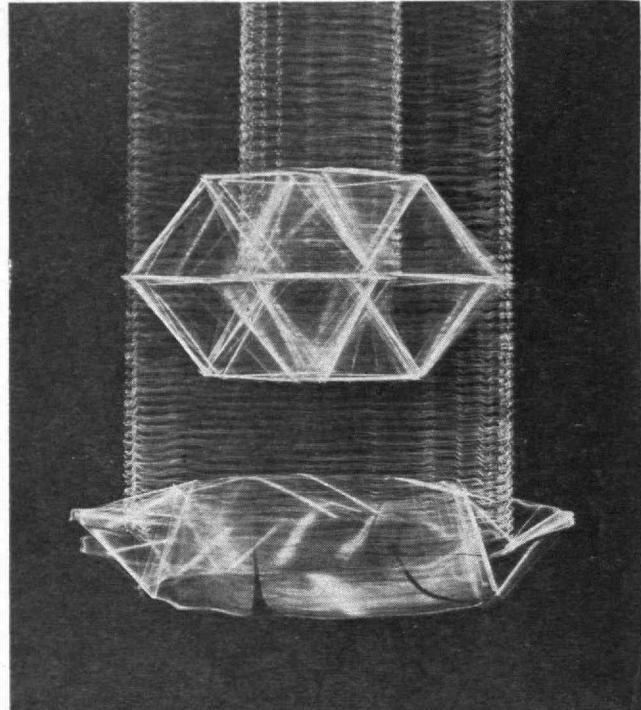
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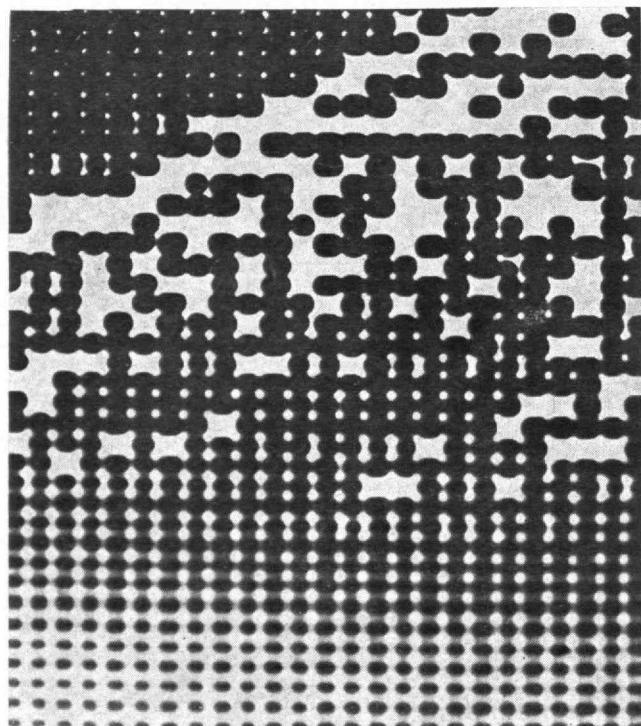
symmetrical relation between man and man, between man and nature, when a rhythm of action and repose synchronizes ends and means, synchronizes flesh, heart and brain so that an aggregation of men becomes a smoothly functioning labor crew, sports team, or research body. The synchronization introduces a new quality of experience; work becomes something far more than the mere fulfillment of an assigned task. The sensing of the unity is the germination of an experience basic to every art.

A work of art has both vitality and order. A shriek of agony has life, pulsating and intense, concentrated, as it

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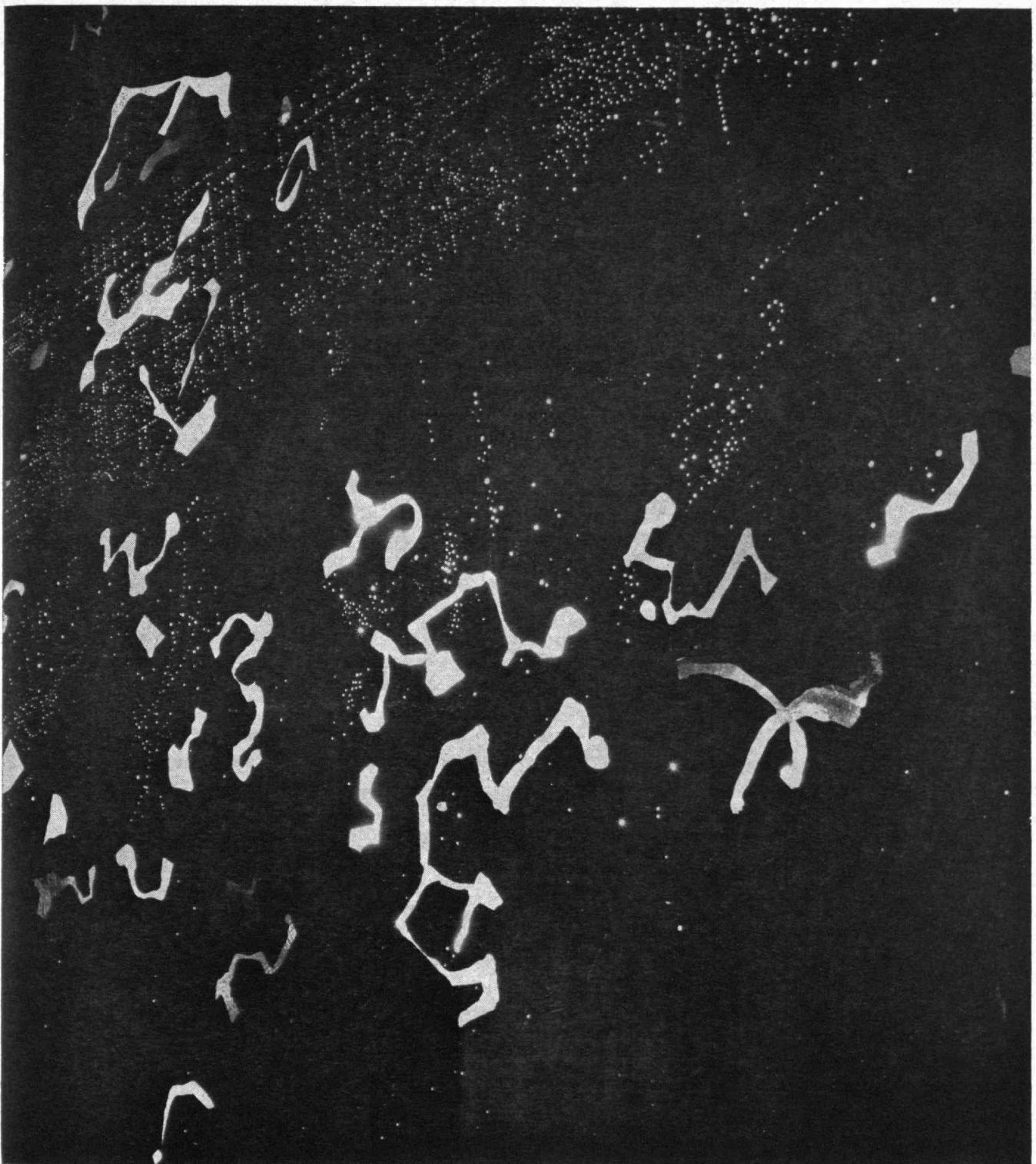
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1 Gyorgy Kepes. THE NEW LANDSCAPE IN ART AND SCIENCE. Exhibition, Hayden Gallery.

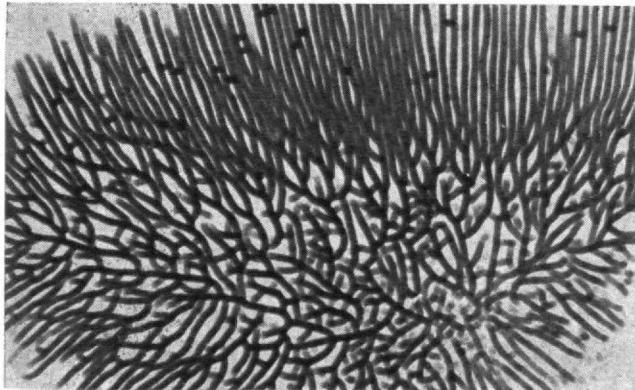
2 Virtual volume of two wire sculptures. Student work, visual design course.

3 Light rhythm. Photograph by Gyorgy Kepes.



4

4 Gyorgy Kepes. Light mural (detail), KLM office, New York City.



5

5 Gyorgy Kepes. Projected light pattern of ink on glass.

were, at a single point. But Picasso's *Guernica* has organized life—absolute expression of agony and absolute discipline of form. And Grünewald's Isenheim Altar, with the most despairing of all Crucifixions, the most triumphant of all Resurrections, is grandly ordered by an orchestrated balance of color and by one of the most rigorously disciplined iconographical schemes in art. What makes a great painting far more than a well-ordered arrangement of colored surfaces, far more than an explosion of emotion, is its balanced proportioning of intense expression and disciplined structure.

Proportion, the basis of effective artistic expression, is the key to broader realms on which the conditions of our time have focused so much acute thinking.

Scientific and technical knowledge has given us an unprecedented opportunity to understand certain aspects of proportioning. Our growing knowledge of biological regulation has become a model for understanding other phenomena. There are a growing number of automatic control systems based upon symmetry and proportion which help us to understand how men stand upright without toppling, how the human heart beats, why our economic system endures slumps and booms. Automatic control devices and self-regulating mechanisms not only have become important in our economic and social life but also have philosophical and symbolic implications of the utmost significance. As we gain precision in understanding and applying automatic control, devising intricate engineering systems which maintain opposing processes in their necessary respective balance, we are the more painfully made aware of our own lack of harmony on the highest levels of our interest, personal happiness, and social equilibrium.

The poetic imagination of the ancients sought harmony in opposites, anticipating some of the advanced scientific thought of our time. Pythagorean thinking introduced the concept of the "mean." As wine and water might be blended in a correct proportion to produce the perfect drink, a proportion completely fair to both of two opposites was thought to be possible always. To Anaximander, the mutual encroachment of opposites was unjust, and reconciliation imperative. Heraclitus not only recognized that events are generated through the struggle of opposites but also realized that change cannot be understood without a guidance of measure:

"The sun will not overstep his measure; if he does, the Erinyes, handmaids of justice, will find him out."

One hundred and fifty years ago, a passionate great poet commented on the same issue, projecting it on the concrete social plane. "Our calculations have outrun conception," wrote Shelley in 1818, "we have eaten more than we can digest. The cultivation of those sciences which have enlarged the limits of the empire of man over the external world, has, for want of poetical faculty, proportionally circumscribed those of the internal world; and man, having enslaved the elements, remains himself a slave."

Nevertheless, emotional return to the archaic, ancestral cave is an obvious failure to function in contempo-

rary terms—however necessary. This temporary stand-still is not a genuine answer to our deep long-range needs. We may suffer from exposure to the new scale, but it is necessary for us to go ahead and meet its challenge.

Only complete acceptance of the world which is being born can make our lives genuinely acceptable. Such acceptance implies, above all, two concrete tasks. One, in every field of human endeavor we must advance to the furthest frontiers of knowledge possible today. Two, we must combine and intercommunicate all such knowledge so that we may gain the sense of *structure*, the power to see, in the deepest, richest sense, our world as an interconnected whole.

There is a reciprocal relationship between our distorted environment and our impoverished ability to see with freshness, clarity, and joy. Fed on our deformed and dishonest environment, our undernourished artistic sensibilities can only lead us to perpetuate the malfunctions of the inner and outer environment that we create. To counteract this spiral of self-destruction, we have to re-educate our vision and reclaim our lost artistic and poetic sensibilities.

To meet this urgent task our universities could contribute by creating educational conditions conducive to an effective intercommunication between scientific knowledge and artistic sensibilities.

Shelley's diagnosis was proven painfully correct by our last 150 years of troubled history. We still could say with him that for want of poetical or artistic faculty we have failed to find our Twentieth Century identity. The distance between life as it is, and life as it could be, is continuously increasing. We are all at fault by default. But much of the blame is due to the artists who have failed at their task to adjust their and our inner horizon to the expanding new outer vistas.

As the Twentieth Century has grown older, most of our artists have recoiled upon themselves. They lack orientation in the total contemporary world, which, if they but knew it, holds as much promise as it does menace. Their honest response has been to scream their isolation. In frantic retreat, many of them have adopted a scorched-earth policy and burned their most valuable cultural belongings. Cornered and confused in a "horror of lost self," as the poet Robert Lowell puts it, some of them advertise brutality as vitality and intellectual cowardice as existential self-justification.

Artists today come together in small groups in great cities. There, in little circles that shut out the rest of the world, the initiates share one another's images. They generate illusory spontaneity, but miss the possible vital, deep dialogue with contemporary intellectual and technological reality. It is unfashionable today, if not taboo, for artists to think and act on the broad terms of cultural and social ideals. No doubt, moralizing in art can lead to creative suicide, just as market-policed and state-policed art can lead to the murder of artistic honesty. But the other extreme—lack of intellectual curiosity and rejection of commitment—leads to emaciation of artistic values.

THE PRESSURE OF NUMBERS

An increasing population means that we must cast aside narrow loyalties and give allegiance to all humankind

By Hudson Hoagland, '24

Executive Director, Worcester Foundation for Experimental Biology

An eminent physiologist, Dr. Hoagland also has studied mathematics and holds a degree in chemical engineering from M.I.T.

We live in a most exciting time—a time of trouble and uncertainty, and also a time of change, challenge, and opportunity. Because of methods and tools made available by science and technology, our generation is in a position to control and direct human affairs to a greater degree than that of any past generation. The most characteristic thing about the human animal is that he is the only animal that can deliberately plan and direct his own evolution. This possibility can be applied to our biological evolution and is the actual basis of our psychosocial evolution.

This last kind of evolution is reflected in the institutions of civilization—art, literature, science, education, industry, commerce, religion, law and other activities, and the ways of living that these bring about. Psychosocial evolution is faster by far than biological evolution since the latter depends on purely chance changes—for example, mutations in the structure of DNA molecules of our germ plasm. Most mutations are harmful or lethal but a very few improve the adaptability of the organism.

Over the last million years mutations led to the doubling in size of our cerebral cortex and this was responsible for the origin of man. His enlarged cortex enabled him to use language to pass on information from person to person and, cumulatively, information from generation to generation. His great brain also led to his invention of weapons and tools—giving this naked, slow creature, ill-armed by nature, striking advantages for survival in competition with larger, more powerful and ferocious animals. Language, weapons, and tools produced the development of our new form of evolution—psychosocial evolution. Thus man's great powers of thinking, remembering, and communicating are responsible for the evolution of civilization.

Over the last 300 years science has become our major tool in advancing psychosocial evolution. But there is

ambivalence about the social impact of most scientific discoveries. Thus we pollute our environment by radioactive fallout, by industrial waste in air and rivers, and by widespread use of insecticides, which last is necessary if the huge populations of the world are to be fed, regardless of the poisoning of animals, ourselves, and upsets in ecology. There are problems of unemployment brought about by automation in industry and by computer technology, and most drugs of value in medicine, when used inappropriately, are harmful or even lethal. There are critical problems arising from new ways of controlling people. These have arisen through use of the mass media—press, radio, and television for propaganda to control votes, public opinion, and sales of packaged carcinogens in the form of cigarettes. There are also new controls of behavior through conditioning techniques and through chemical agents and drugs. The discovery and use of nuclear energy has great potential benefit as a source of industrial power and for use in the medical sciences. But nuclear bombs, and their rapid multiplication by nation states, uncontrolled by enforceable world law to prevent war, may render man an extinct species.

NATIONALISM OUTMODED

All organisms must adapt to their environments or perish, and our environment changed drastically following Hiroshima in that it now contains nuclear weapons. These render obsolete traditional views of national sovereignty as a way of protecting the security of a people.

We have arrived at a point where the only use that these weapons have is to deter aggressors by convincing both them and ourselves that we would use nuclear weapons to commit genocide and in return accept suicidal retaliation. Neither we nor an enemy can defend our respective ways of life by mutual suicide. Thus war as a way of settling national differences has become obsolete, since any war may escalate into a nuclear exchange, especially as more nations come to possess nuclear weapons and their means of delivery. A third world war cannot be won by anyone.

An all-out nuclear war—and restricted nuclear wars are most improbable—would do irreparable harm to future generations by damaging the genetic material of those who might survive the blast, fire, disease, and starvation. This material in the form of a chemical code structured in molecules of DNA is located in the nuclei of our sperm and egg cells. All of the material of the DNA in all the germ cells in all of the people of the world, if added together, would weigh only a small fraction of an ounce, i.e., there is about 10 trillionth of an ounce in a fertilized human egg. It has taken over 2,000 million years of evolution by natural selection to produce this coded material to pass on information to the next generation to tell it how to make a person.

OUR MAJOR DISEASE

In the event of nuclear war those who might survive blast and fire would acquire an added burden of lethal and deleterious mutations that will cause cumulative genetic damage and deaths in the generations that follow. Over 99 per cent of all mutations are lethal or harmful and all are inherited. It is appalling to consider the arrogance and stupidity of any one generation, which for always ephemeral political differences, as judged over the time span of generations, is prepared to damage and destroy this irreplaceable genetic material which is the basis of our humanity.

It is especially ironical that the humane practices of medicine and public health to reduce physical suffering and prolong healthful lives should be the primary cause of a major social disease. This disease is the unprecedented increase in world population, especially as reflected in economically underdeveloped countries least able to afford this increasing burden. Thus in Taiwan, within two decades, the life expectancy increased from 43 to 63 years. This 20-year gain in life expectancy took 80 years to bring out in the white population of the United States. These figures are typical of what has happened in most underdeveloped countries. In many countries the population is increasing at the rate of over 3 per cent per year, which will double it in 23 years. The world population as a whole is increasing at 2 per cent per year, which will double it in about 35 years. The oncoming generation of poverty-stricken, economically unproductive young people will increase the birth rate further as they come of age.

Already this oncoming generation in some places is hungrier and more illiterate than their parents and has fewer job opportunities. This is bad news in countries with rising expectations now containing two-thirds of the world's people, such as China, India, Pakistan, the United Arab Republic, and various Latin American countries where the average per capita income is less than \$100 per year, and it is also very bad news for those of us in the rich countries.

Since population growth depends only on the difference between births and deaths, there are only two solutions to this social disease of overpopulation. One

is to increase death rates and the other to decrease birth rates. So far we have manipulated death control by decreasing death rates and so increasing the population. No one that I know of advocates reversing this process, although a nuclear war would certainly do it, and such a war is made increasingly likely by the runaway populations. The other alternative solution is birth control and family limitation planned on a rational basis.

These various crises, dilemmas, and problems have come about from advances of science and technology operating in a framework of social institutions, beliefs, and myths that belong to another age and are ill-adapted to meeting modern crises. Concern and identification with mankind in contrast to one's identification with some subgroup—tribe, clan, or nation—is rare indeed. People simply are not brought up with a conscience that values their species. But some such loyalties must be developed if we are to survive and develop a world governed by enforceable law against annihilating nuclear war and if we are to control our populations.

How can human behavior be directed into channels of concern for man to replace parochial group rivalries and hates? Clearly new patterns of thought are needed as never before to meet the crises of our time. Most of the beliefs we hold so strongly are established by accident of birth and what we learn, hit or miss, before we are seven years old. Emotionally charged prejudices are propagated from generation to generation by parental and adult authority and by the use of myths and symbols. The strongest beliefs one holds may bear little relation to the facts and realities of life as related to the common good. Irrational aspects of human behavior—chauvinistic nationalism and racial intolerance—keep us locked in patterns of conduct highly dangerous in the nuclear age, and dangerous in relation to other changes brought about by science.

OBSTRUCTIVE BELIEFS

It is these irrational drives that make us adhere to myth and symbol with great emotional vigor that frustrate the kind of changes that must be wrought if mankind is to survive and advance in our new revolutionary age of science and technology.

The education of our children for this new world is our major hope. Brock Chisholm has pointed out that concern for the welfare of the human race is not within the tradition into which any of us was born and has no conscience value. It must be learned intellectually against the pressures of many emotionally charged, competing loyalties.

Most of us are entirely creatures of accident; the accident of time, place, class, and family, all of which are very poor reasons for believing in anything, and it is from these loyalties that the child acquires his most intense beliefs at a very early period. Chisholm pointed out that most children of the world are still being taught that utterly false doctrine which makes

the welfare of part of the human race more important than that of the whole. Every prejudice and orthodoxy which limits freedom of thought and enhances prescribed and unchanging attitudes is an obstacle in the way of developing better human relations and peace in the world. He points out that the most pressing problems of education would appear to be the liberation of our children from many of our own limiting loyalties.

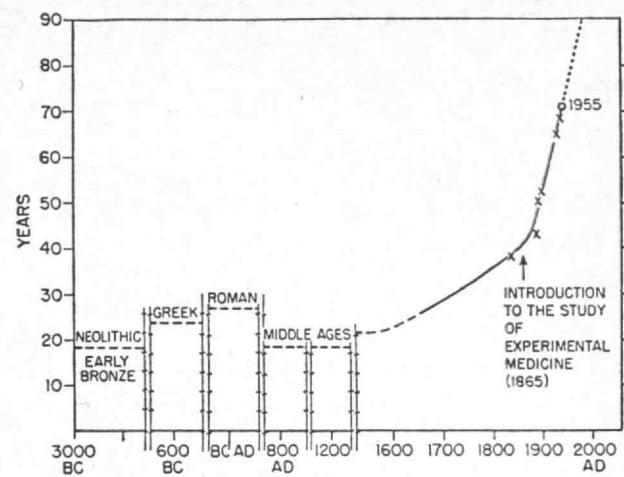
The behavioral sciences have advanced rapidly in recent years. Much has been learned about the brain, including the psychology and physiology of the emotions and the role of the subconscious in derailing rational conduct. There are advances in understanding the learning process and the ways to improve it, and there is hope in these new insights for human welfare—as well as danger of their control by power-hungry groups and politicians.

We are, of course, unaware of many of our subconscious drives, arising in our ancient limbic brain, which lead us to invent rationalizations of behavior to make our conduct acceptable to our conscience and to society. Unfortunately such rationalizations often invest myths and symbols with enduring emotional charges that lead to strong overbelief and to rigid institutionalized social behavior often impervious to objective considerations and the findings of science.

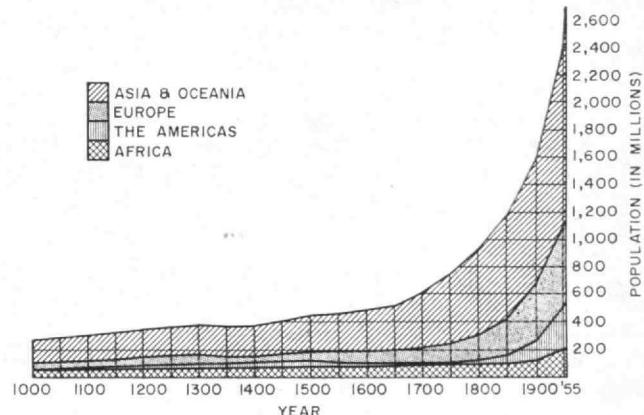
Mark Twain said, "Faith is all right, but it's doubt that gets you an education." Faith can too often be strong, emotionally charged belief in some comprehensive scheme of things supported by quite inadequate evidence, and in the name of such faiths men have often behaved abominably. Strong emotional commitments to authoritarian ideologies in religions and politics have repeatedly led to persecution, violence, and wars. The Crusades of the Twelfth and Thirteenth Centuries, the Catholic and Protestant wars of the Sixteenth and Seventeenth Centuries, the current Hindu and Moslem fighting are examples; as were the vicious racist doctrines of the Nazis, the contemporary aggressive thrust of world communism and the fanaticism of some of our own ultra-rightists and racists here at home.

Fortunately there is an ephemeral quality about all our group hates. The theological issues of the Crusades or of the Catholic-Protestant wars of the Sixteenth Century are no longer important. No one cares enough about them to fight over them any more. Think how we hated the Japanese and the West Germans two decades ago; today they are our friends. Few of our ideological or nationalistic hates last more than two or three generations. But there will be nothing ephemeral about the outcome of a nuclear war.

If man is to survive and advance in his new nuclear environment he can no longer continue to conduct affairs between the peoples of the world in terms of obsolescent concepts of Nineteenth Century nationalism. We now have to learn to live in a world governed by enforceable supranational law against war. This means a form of world government, with the sovereignty of nations—



Increasing human life expectancy (above) has contributed to a world population now expanding by about 40 million a year.



in regard to their warmaking potential—subordinated in a way similar to that of our states in relation to our federal government and of the Swiss cantons in relation to the government of Switzerland. This means an armed international police force powerful enough to prevent war. Unless we can do this, history may record, if there should be any history after a third world war, that man's million-year-old neocortex had turned out to have been a rapidly evolving phylogenetic tumor capable of inventing terrible weapons of destruction but unable to control their use in response to his hates and fears arising in his ancient limbic brain.

It is my view that man's future depends upon an educational system that will teach the young that one has to be a human being before one is an American, Frenchman, Russian, Chinese, White man or Negro, Communist or Capitalist, and that the most basic human values worthy of our loyalty and respect are independent of racial, national, political, and religious boundaries. The young should be taught man's place in nature as an organism that has evolved by the same remarkable processes of natural selection that have produced all the other forms of living things. But man is unique in being able to control and direct, for progress, his own evolution. How to do this effectively is his supreme challenge which could be the focus of both the sciences and the humanities for the oncoming generations.

M.I.T. men help to place array of seismometers in the earth to identify explosions and earthquakes

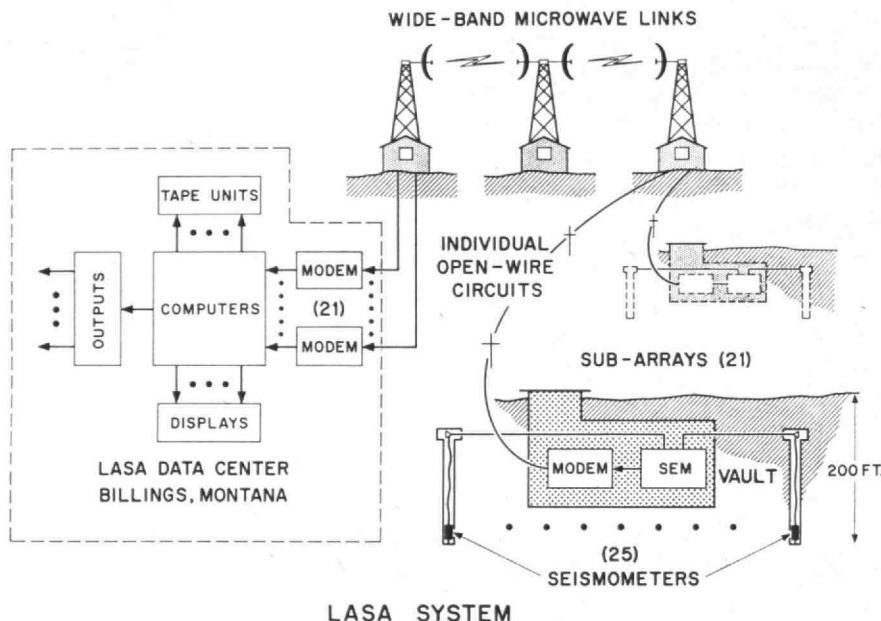
A Step Toward a Bomb Ban

With M.I.T. Lincoln Laboratory's help, the United States placed a huge "ear" in the ground this year to detect and identify the earth's rumbles. It is an instrument expected both to aid study of the structure of the earth and to increase the certainty with which underground nuclear explosions can be recognized as such from afar. President Johnson called it "another step toward a comprehensive nuclear ban," and directed on the day of its dedication that data from it "be made available to all countries of the world."

This "ear" is a Large Aperture Seismic Array, called LASA, spread over 10,000 square miles of Montana, and built during that state's hardest winter in 43 years. It consists of 525 seismometers buried 200 feet in the earth and connected by thousands of miles of circuitry to computers that are programmed to interpret the waves caused by earthquakes and other disturbances.

To discriminate reliably at a great distance between an underground nuclear explosion and a natural event of comparable magnitude, even tiny earthquakes must be detected. Wavelengths of about 10 kilometers are involved, and a large array of sensors appropriately spaced is needed to achieve the desired directivity.

Seismic signals are inherently complex and consist of both compressional and shear waves. The first evidence of a disturbance to



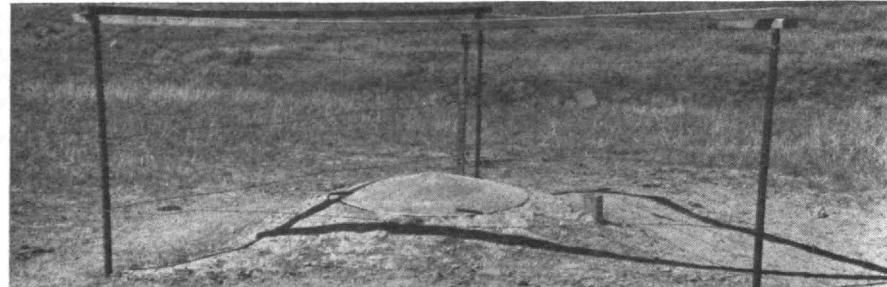
reach an array such as the LASA is usually a compressional wave directly from the source. This is followed by others that take more circuitous routes and by slower moving shear waves.

Designers of the LASA were guided by findings with similar but smaller facilities operated by the Advanced Research Planning Agency of the Department of Defense in Oregon, Utah, Tennessee, Arizona, and Oklahoma, and by seismic research undertaken by the United Kingdom. LASA is expected to detect earthquakes and explosions only from one-fifth to one-twentieth as great as those previously identifiable at long ranges.

The 525 seismometers are in 200-foot wells to reduce the pickup of surface noise. They are laid out in 21 groups of 25 each. Equipment at each well amplifies the signal for transmission to the center of each group. From those centers the signals go via telephone lines and microwaves to a central data-processing facility at Billings.

In addition to being amplified by a factor of 10,000, the signals are converted from analog to digital form to preserve their character. At Billings, several general purpose computers process and record the data. Some of it is analyzed on the spot, and some is relayed to the Air Force's seismological center in Alexandria, Va.

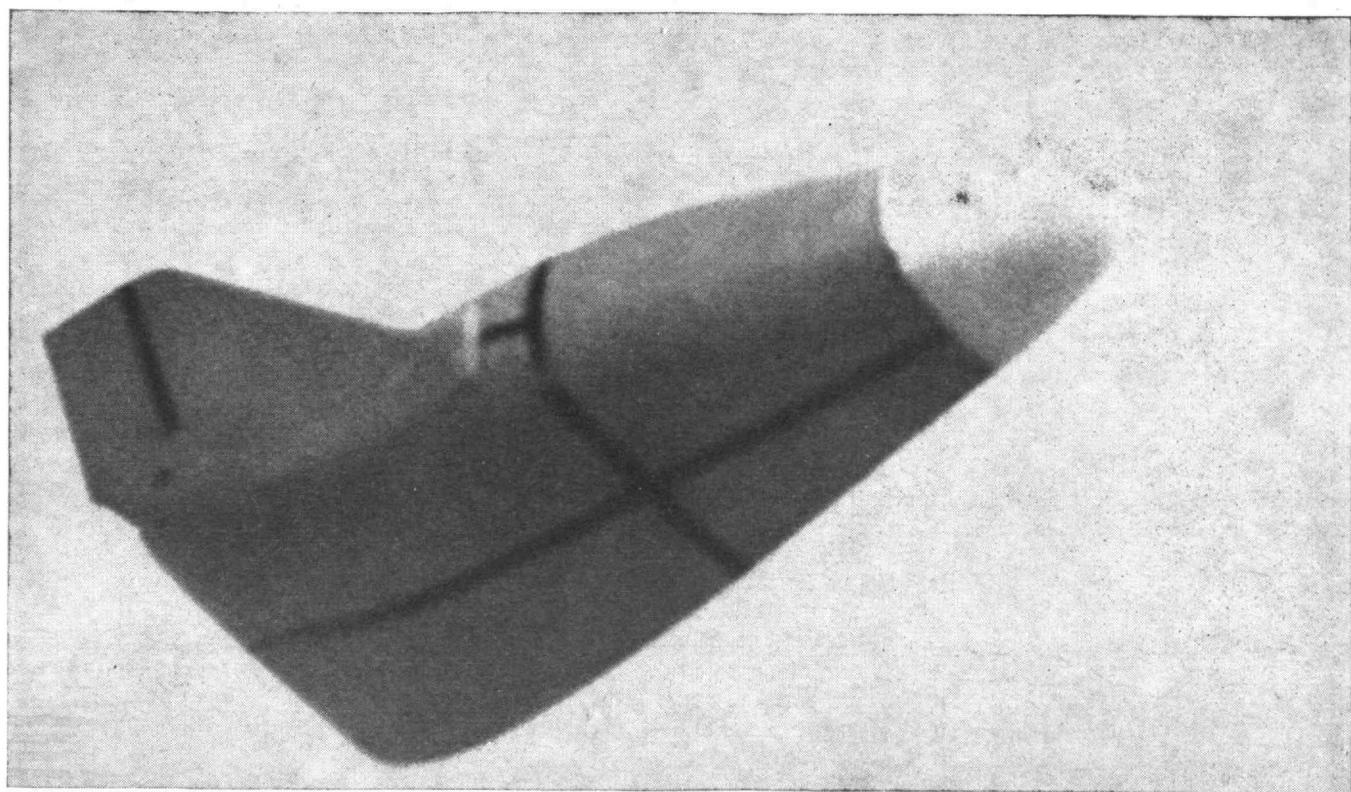
The seismometer wells were drilled with mobile rigs, and the cables connecting them were laid three feet below the ground to prevent interference with normal use of the land. At points where the lines from each group come together, a monolithic concrete underground vault was poured to house amplifying and data transmission equipment.



LASA seismometers are below vaults like this, far from the madding crowd.

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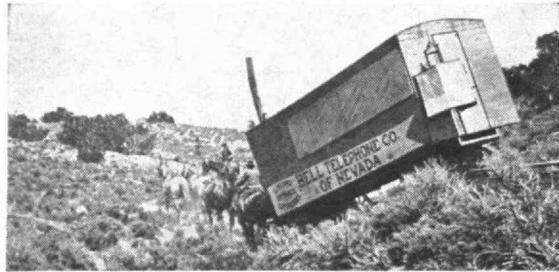


PRIME lifting body, a step toward this goal, is scheduled for Air Force flight tests in space next year.

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Telephone service has come a long way since that historic call in 1915. It has grown in scope from 9,000,000 phones and a single open line spanning the continent to 88,000,000 phones and a huge network of several hundred thousand channels including 24,000 that cross the continent, via several different routes, from the east to the west coast.

Accomplishment has been the keynote since the first coast-to-coast telephone call. Improvements in local exchanges and Long Distance circuits have led to better and more efficient telephone service.

These developments have been effective in reducing the cost of calls. Fifty years ago, the cost of a three-minute call from New York to San Francisco was \$20.70. Today, that same call costs you as little as \$1. (Rate for 3-minute, station-to-station call, after 8 P.M. and all day Sunday, plus tax.)

And still the future is full of promise. New phones will be introduced, technology will be improved and advances made that will open up a whole new world of communications.



Today, 30,000 calls a day are completed quickly and easily between New York and the west coast and Long Distance is truly "the next best thing to being there."



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Keeping Pace with Change

The principal characteristic of present society is rapid change, and industrial managers more and more must learn to manage change itself, Alumni of the Alfred P. Sloan School of Management were told at their 1965 convocation. They heard forecasts of specific changes, including the dissolution of the bureaucratic system of organization, "a lifeless crutch that is no longer useful." They also considered a new concept of the capitalist economy as an "enterprise system" based on constant innovation.

The convocation was the triennial gathering of Sloan Fellows and more than 600 Alumni and guests returned to M.I.T. from October 10 to 12 for a series of intensive lectures and seminars and for special events marking the dedication of the new Grover M. Hermann Building. They also gathered at a banquet in honor of Alfred P. Sloan, Jr., '95, sponsor of their program and the school's benefactor.

Such is "the changing scale and scope of change itself," Warren G. Bennis, '55, Professor of Management, told the Alumni, that "no exaggeration, no hyperbole, no outrage can realistically appraise the extent and pace which modernization involves."

A cardinal effect of these changes, he said, will be "the end of bureaucracy as we know it and the rise of new social systems better suited to Twentieth Century demands of industrialization." As a social invention, bureaucracy was perfected during the industrial revolution and was developed, he noted, "as a reaction against the personal subjugation, nepotism, cruelty, and capricious and subjective judgments which passed for managerial practices in the early days" of that period. "It was an organization ideally suited to the values of Victorian empire," he said, but now it is "out of joint with contemporary realities."

Thus, as every age develops an organizational form appropriate to its genius, according to Professor Bennis, the Twentieth Century is generating "a complex social process which involves a deliberate and self-conscious examination of organizational behavior and a collaborative relationship between managers and scientists to improve performance." A result of this unprecedented development, he says, is "a fundamental change in the basic philosophy that underlies managerial behavior," a change to more humanistic attitudes toward men, the use of power and the principles of organizations.

Organizational life in the next 25 to 50 years will be dictated by several conditions, according to Professor Bennis. There will be a trend toward large enterprises and a lessening of competition as interdependence grows among businesses and between business and government. Brain power will become more important to industry. People will be shifted from job to job with little concern for "having roots" or a homestead and, being better educated, will be more intellectually committed to their jobs and will rely on temporary social arrangements in which they will be involved "with

relationships rather than with relatives." The tasks of a firm will be more technical, complicated, and unprogrammed, and a company will be organized in task forces to solve specific problems, Professor Bennis said.

The very basis of progress of the American economy is innovation and the management of change, Sidney S. Alexander, Professor of Management, emphasized in his lecture. Per-man-hour growth of the gross national product is 2 per cent, he said, and almost all of the advance is directly or indirectly associated with innovation. Only .15 per cent is attributable to capital and thus innovation is "the primary drive of the economy."

As a measure of change, scientific knowledge is doubling about every 10 years, Provost Charles H. Townes noted in his talk on "New Technology and Industry."

In the future perhaps the most striking breakthroughs will come from relatively unknown fields, he suggested. "By unraveling what nature is doing, surely we'll learn how to do it, too," Dr. Townes said. In biology, for example, advances in genetics hold promise of ability to create new species of plants and animals, and in the technology of



The Institute's new Hermann Building is adjacent to the Sloan Building.

control, he added, we may be able to achieve a circuit that consists of only a few molecules.

Research and development must be treated as a gamble and "in looking back we can see that our judgments have always been too conservative," Dr. Townes said. For example, it would have been profitable for industry to have undertaken the development of integrated circuits, which were an outgrowth of military research, but the uncertainties of the project were a deterrent.

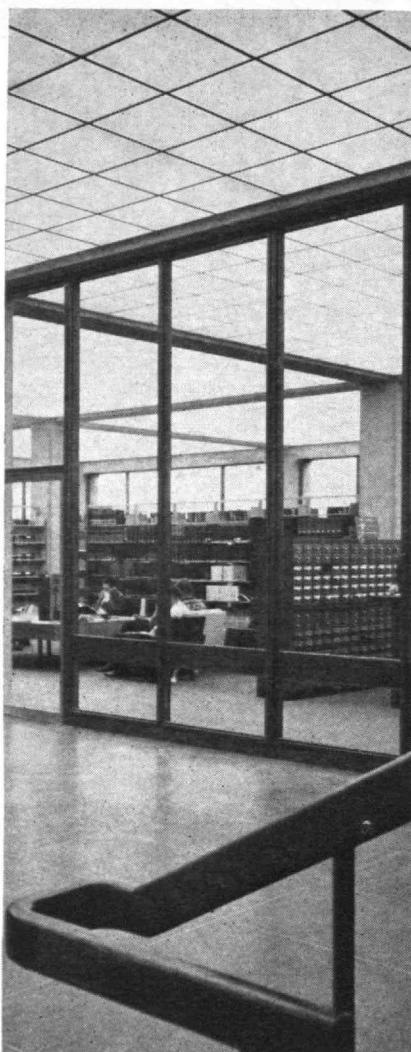
Changes in ways of teaching management were urged by Elting E. Morison, Sloan Fellows Professor of Management. Recent graduates have indicated that their university training did not prepare them to understand the efficient use of the power of their offices and "the connectedness of things" that forms an organizational system, he said. He suggested that one solution might be an extended period in an industrial organization, a "kind of internship," during a student's graduate studies.

One of the most interesting phenomena of recent economic history is the development of the European common market, but this, too, is still undergoing change, according to Hermann J. Abs, Member and Speaker of the Board of Management of the Deutsche Bank AG, Frankfurt (Main), West Germany.

Thomas J. Watson, Jr., Chairman of the Board of International Business Machines Corporation, told Alumni that leaders of multi-national companies should use their organizations to advance international political understanding. After describing a hypothetical nuclear attack on the U.S. East Coast, he said, ". . . if we leave the future to the gods of chance, this scenario will probably come true here in America or elsewhere in the world in the next decade. The handwriting is pretty plainly on the wall."

In three to five years, eight to 12 nations will be able to manufacture atomic or nuclear weapons, Mr. Watson said. "Within the foreseeable future, nearly every nation on earth will be able to make bombs, and the cost will be small."

Before accepting nuclear war as inevitable, businessmen should join in an attempt to create a worldwide prosperity that would elimi-



First floor library in Hermann Building.

nate dissension and jealousy among nations, he said.

The Hermann Building on M.I.T.'s Sloan campus also emphasizes the changing aspects of M.I.T., both in architecture and in the expansion of studies in management and the social sciences. During the convocation Alumni visited the building at an open house and attended a luncheon in honor of Mr. Hermann, Honorary Chairman of the Board of Directors of the Martin Marietta Corporation, who made a gift of \$1,500,000 for it.

James R. Killian, Jr., '26, Chairman of the M.I.T. Corporation, gave Mr. Hermann a replica of the building's dedicatory plaque, which cites Mr. Hermann as "architect and builder of corporate enterprise, honored widely for his creative philanthropy, whose devotion to the advancement of education and professional management led him to make a generous gift for this building."

Dean Howard W. Johnson of the Sloan School presided at the luncheon. Among special guests were George M. Bunker, '31, President of Martin Marietta, and William B. Bergen, '37, a Vice-president of Martin Marietta and President of Martin Company, its aerospace division.

Other support for the building, which cost approximately \$3,000,000 in funds for construction and operation, included a gift of \$1,000,000 from Mr. Sloan, a \$1,000,000 research facilities grant from the National Science Foundation to further studies in the social sciences, and a \$500,000 gift from an anonymous donor.

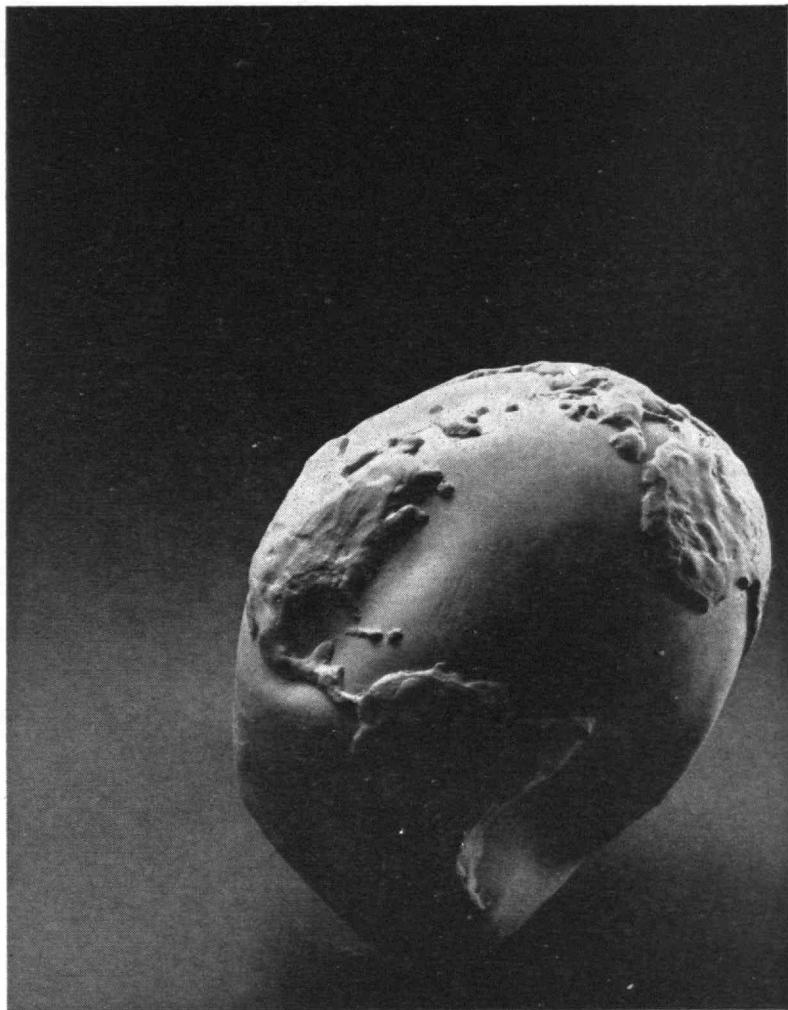
Architects for the Hermann Building were Professor Eduardo F. Catalano of the M.I.T. Department of Architecture, in association with Robert Brannen and Paul Shimamoto, '61, Boston architects. They designed a structure of cast-in-place architectural concrete—approached by a raised plaza that leads to the adjacent Sloan Building and will eventually connect these two buildings with a 30-story apartment building, to be started soon, for married students and Faculty. Beneath the plaza, about 30 cars may be parked.

The first and second floors of the Hermann Building house the Dewey Library of Economics and Industrial Management.

The third and fourth floors contain offices and classrooms for the Department of Political Science, the Sloan School, and the Center for International Studies.

Mr. Sloan was unable to attend the banquet in his honor but he sent a message that was read by Everett N. Case, President of the Alfred P. Sloan Foundation, which Mr. Sloan founded and which supports the M.I.T. Sloan Fellowships. Dr. Killian was principal speaker.

On the convocation's final day, each Alumnus selected three seminars from among more than 60 that were offered by 30 members of the Faculty of the Sloan School, the Department of Economics, and the School of Humanities and Social Science. At a luncheon that day, William S. Crowley, '59, President of the Society of Sloan Fellows, announced the election of Dean Emeritus E. P. Brooks, '17, of the Sloan School as an honorary member of the society.



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The Impact of Science on Literature

By Stanley Klein, '58

Few novelists incorporate science in their books. Those who have, usually had scientific backgrounds; C. P. Snow, for example, comes instantly to mind. Mitchell Wilson, a native New Yorker, is another renegade scientist who has forsaken laboratory for typewriter to become a novelist. In the Soviet Union Mr. Wilson ranks with Hemingway and Salinger in sales. He is one of the few American authors to receive royalties from the Soviet Union, an achievement which he attributes to "unvarnished capitalistic acquisitive pertinacity."

Last spring Mr. Wilson spoke at a seminar in a series entitled "New Goals for Technology," sponsored by the M.I.T. Alumni Association of New York. Dan Cooper, '46, publisher of *International Science and Technology*, headed this series and, as chairman of the session subtitled "The Two Cultures: The Impact of Science on Literature," I invited Mr. Wilson to speak.

Our group thought that a new goal for technology ought to consist of getting it more closely interwoven into the cultural fabric of our society. Whether specifically intending to or not, Mr. Wilson, through his novels, is having precisely this effect. His fiction overflows with characters and plots drawn from science. His works probe such themes as the emotional problems that beset the creative technical man, moral dilemmas that he faces, and threats to his creativity.

"I would find it impossibly dull to write about a person who is not part of the scientific temper," he told us. "The character would bore me. Some of my books, for example, deal with engineers who get caught in the dilemma that tore at Edison, the Wright brothers, and I don't know how many others. It appears in all their biographies. They yearned to be scientists, to use the scientific approach. And yet, at the same time, they wanted to be successful in the most commercial terms. It is an American dilemma that still occurs."

Three of his novels that tap the drama of the scientific world are *Live With Lightning*, *My Brother, My Enemy*, and *Meeting at a Far Meridian*. The latter was published simultaneously in New York and Moscow, and Mr. Wilson has reworked the book into a script for a motion picture. The film is to be produced jointly by the United States and the Soviet Union, with the two countries dividing costs, location, and profits.

Mr. Wilson's credentials as a man of letters are available for all to read. But, what of his credentials as a

scientist? Here, too, he excels when compared to most novelists. He studied physics and was graduated with a master's degree from Columbia University. While there he conducted research under I. I. Rabi and served as an assistant to Enrico Fermi. He was employed by Columbia Carbon for four years and has five patents in the high-frequency heating of very thin films.

"I have been writing fiction since my undergraduate days," he said, "but I could never write about scientists while I was working in a laboratory. I had to leave research to write about it."

It is unfortunate, Mr. Wilson told us, as he reflected on the nature of science and literature in today's world, that so much of modern literature, and very often that which is the most popular among the literary intelligentsia, is the 'false profound.' "It is false because the author is deliberately evasive about what he wants to say. He attempts to be provocative, and wants the reader to think that he is. Yet, behind the mystification there is always a cliché—always something trivial: Life is futile. It offers no hope. Man is incorrigible . . . and so on. Discovery of the meaning then exhausts all that may be rich in the literature."

"Economy! Illumination! These are the hallmarks of science. The profundity lies in its simplicity."

"The Newtonian laws of motion, the Einstein relativistic equation, and other basic scientific expressions are models of algebraic simplicity," he continued. "They become overpowering and fertile when you apply these apparently simple statements to nature."

"Take F=ma! You can end up talking almost simultaneously about stars, planets, gears, watches, falling ping-pong balls, erosion of mountains, and the movements of imponderable masses—all this goes on at once. This is profundity. The profundity comes after the statement—not before! You are overwhelmed by the richness that comes pouring out."

"Science is in the atmosphere, not the information of science, because that can be trivial; the scientific attitude still has validity; the scientist is still fresh with the adventure of tomorrow. It is his sense that it's all still to come. It's a feeling, contrary to the literature that I've been talking about, that there is so much which the human animal can still achieve. There is an awareness and an acceptance of the fact that the climate of man's life is predominately change."

"The scientist doesn't ask for certainty. He simply asks to be on the way."

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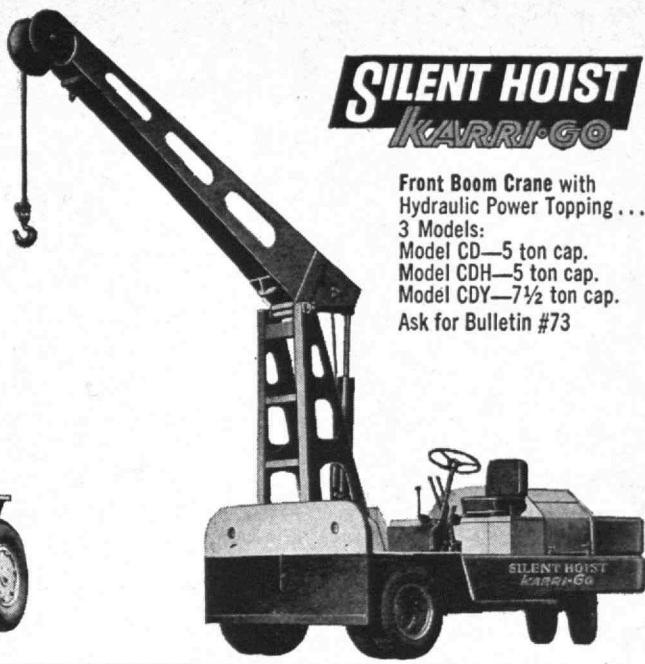
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New Materials in the Making (Concluded from page 22)

tive elastic constants of the constituents as well as their relative volumes.

When a single fiber is loaded axially in compression, its length-to-diameter ratio is so large that it buckles. When the same fiber is embedded in a matrix, the matrix supports it against buckling. The combined behavior of fiber and matrix under axial compression is consequently more complex than in simple tension even if all materials are assumed to behave in a perfectly elastic fashion. The picture is still more complicated if, as is usually the case, the fiber is not straight to begin with but is twisted into a helix, as in a yarn, or crimped, as in a woven fabric.

When masses of parallel fibers are embedded in a matrix and compressed axially the interactions of fibers and matrix are considerably more complex than the behavior of a single fiber, even if perfectly elastic behavior of all constituents is postulated.

Fiber and matrix are not necessarily perfectly elastic. Some fibers such as glass do have nearly linear stress-strain behavior (Hookean) almost until failure occurs, but many matrices do not, and visco-elastic, that is, time-dependent, behavior is evident. This adds still more complexity to the composite behavior.

A problem of crucial importance in the combined behavior of fiber and matrix is the stress condition that occurs at the end of a fiber, and at a break in a fiber. In either event, the stress that was carried by the fiber is transferred to the surrounding matrix which now has to transfer the stress in shear to other fibers in the composite. Similarly, shear stresses extend back along the length of the fiber from the end.

Many factors affect the magnitude and extent of these stresses. The shape of the end of the fiber, whether abruptly transverse, tapered, or rounded, greatly alters the stress concentration; an abrupt right-angled shape

causes extreme stress build-up whereas a gradually tapered end greatly reduces this. The relative elastic and shear moduli of the fiber and the matrix, whether they behave elastically, plastically, or visco-elastically, and the nature and strength of the bond between the fiber and the matrix—all have major effects upon the stresses set up at this point. If the stresses are high enough failure may occur in tension or shear in the matrix, in tension in the fiber, or in the bond at the interface between the two. The matrix may tear across to an adjacent fiber, it may peel back along the fiber, or the fiber may fail at another point.

Composites of strong filaments laid parallel in a softer matrix may develop strengths and elongations greater than are predicted by the rule of mixtures.

The foregoing brief and far from complete description of some aspects of composite fibrous behavior should make it evident that their behavior under stress—their micromechanics—is far from being completely understood, and that much still must be done to clarify it and, consequently, to take full advantage of their potential.

This article was adapted from the Edgar Marburg Lecture given last June before the American Society for Testing and Materials.

Highway Research Grant

The General Motors Corporation is making a \$1,000,000 grant to M.I.T. over the next four years for long-range research aimed at safer and more efficient highway transportation.

"For many years, M.I.T. has been active in studies of air transportation problems and has carried on limited studies in specific phases of highway transportation," says Dean Gordon S. Brown, '31.

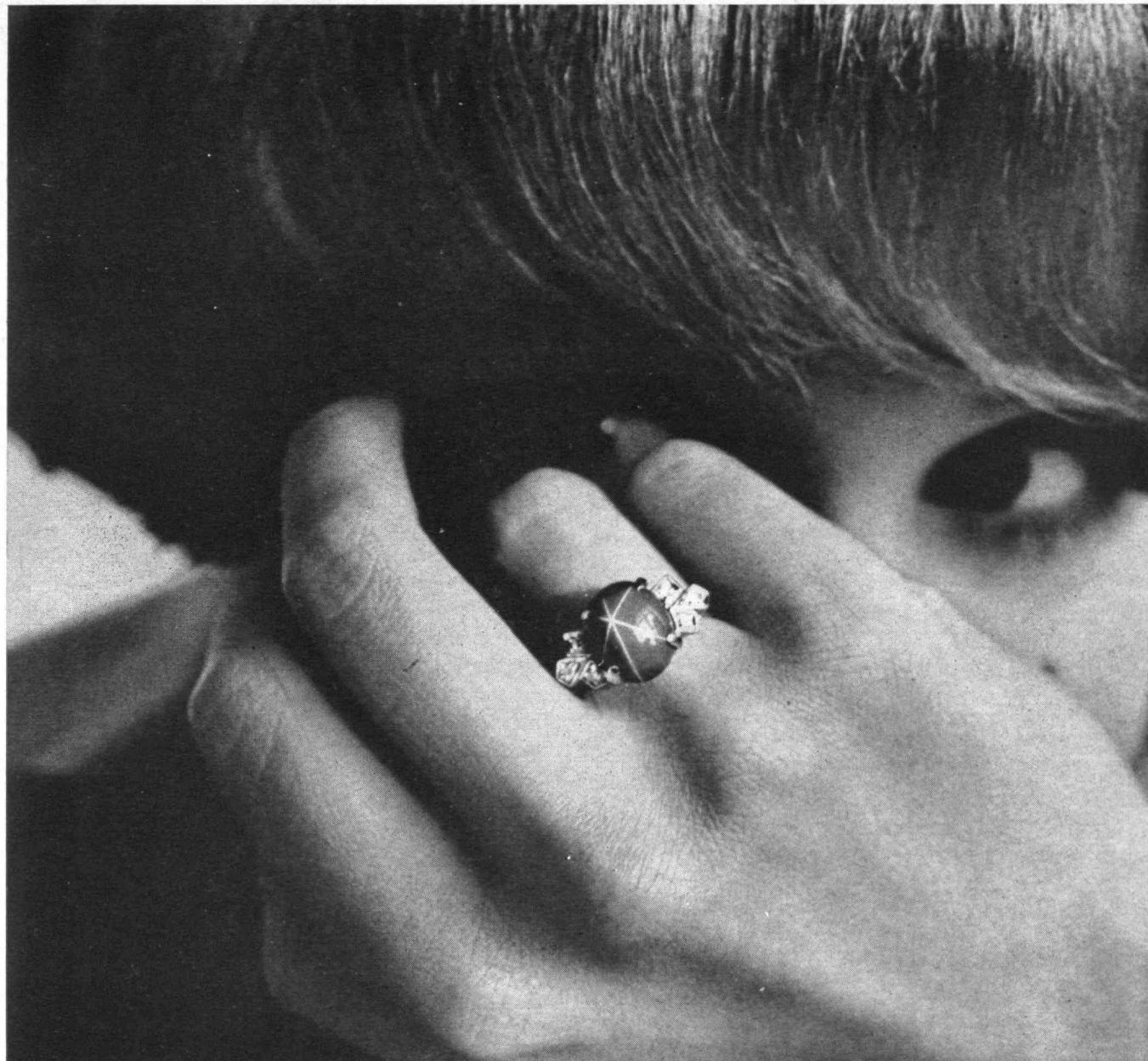
"In view of the fact that over 90 per cent of all inter-city passenger travel is by automobile, expansion of current efforts to encompass an exploration of the broad systems aspects of highway transportation appears most desirable at this time."



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Materials Research in a New Center

(Continued from page 17)

with crystal perfection. Different types of materials require different techniques and the three separate groups deal with metals, semiconductors, and insulating materials. Already these groups have had to solve some interesting basic problems in crystal growth and have supplied some of the other research groups with special materials for their work—for example, semiconductors with very special impurity content and ferromagnetic material which is also insulating.

Evaluation of material is just as important as preparation and we have for this purpose an up-to-date chemical laboratory including spectro-chemical analysis. X-ray methods of analysis are used for determination of structure and perfection of crystals as well as for accurate orientation prior to cutting and polishing. Optical microscopes and electron microscopes are provided for examining the fine structure of materials and the powerful electron microprobe techniques are used for species identification on a microscopic scale, such as the determination of impurity precipitation at the boundaries between micro-crystals. Modern optical and infrared spectroscopic techniques are available in some of the research groups. Special equipment for preparation of materials in ultra-high vacua is being provided and equipment for examination of materials under high pressure will also be available. An instrument shop provides and maintains a certain amount of measuring equipment for common use and the facilities include a small but well-equipped machine shop.

We have discussed mainly the research facilities provided by the new building, but space is also provided in it for classrooms, teaching laboratories, and a small library and reading room. The most extensive contribution to teaching of the new laboratory will naturally be the facilities it provides for the laboratory training of students in the techniques of materials research—especially the opportunities it provides for graduate students to do their thesis work. Course work will not be overlooked, however, and Faculty members working in the laboratory are planning and indeed already giving some courses intended to be of a deliberately interdisciplinary nature as well as the regular courses given as part of their departmental teaching program. These special courses will be given, too, under the sponsorship of the various academic departments.

A new venture such as the Materials Center is bound to face problems since it is in many ways an exploration of the unknown. There is, however, some experience to build on at M.I.T. A laboratory like the Research Laboratory of Electronics is to some extent interdisciplinary, including physicists and chemists, although the larger part of its staff is affiliated with electrical engineering. There are considerable differences between the Materials Center and other laboratories in the Institute and working out the best method of operation will itself be an academic adventure. In this the

director is supported by the Committee on the Center for Materials Science and Engineering which includes the Deans of Science and Engineering, Heads of the various departments most intimately concerned, and some outstanding members of the academic community. To help with the day-to-day problems of running the laboratory the director has an advisory committee and an administrative office. The latter is also available to help members of the laboratory staff with administrative problems arising from their contracts and in other matters. In the completion and occupation of the new building the first stage of the plan has been fulfilled.

A fine building does not make an outstanding laboratory, however, and the fruits of these endeavors have still to be gathered. A good start has been made and some fascinating new research projects are already well under way. It will be for future generations of students to look back and evaluate the contributions which the Materials Center made to their life at M.I.T. New results arising from research may make important impacts on our technology but the main fruits of our endeavors, we hope, will be a body of highly educated and trained scientists and engineers with special skills in bending materials to the use of man in his further search for control and use of his environment.

The Review's coverage of new interdisciplinary centers at M.I.T., and papers presented at the recent Alumni Seminar, will be continued in the January and February issues.

Another Computer

An IBM System/360 Model 40 computer has been installed in the Civil Engineering Systems Laboratory at M.I.T. for use in the ICES (for Integrated Civil Engineering System) program of research and development. This program, begun under the sponsorship of the Massachusetts Department of Public Works and broadened to include co-operation with other agencies, seeks new ways to use computers in planning and designing transportation systems, buildings, bridges, and other structures. The new machine will also be used to prepare for civil engineering use of a System/360 Model 67 time-sharing computer complex to be installed at the M.I.T. Computation Center by early 1967.

It is the first IBM System/360 delivered to a civil engineering organization.

The Xenon Lighthouse

The first xenon-flash lighthouse in U.S. territorial waters was being installed this year at the mouth of Chesapeake Bay, off Cape Henry, Va., and Professor Harold E. Edgerton, '27, predicted that such lights will replace the incandescent filament lamps used hitherto. The xenon beacon flashes short, brilliant bursts of blue-white light that is more readily noticed by the human eye, and is less subject to sudden burnout. It represents a major advance in lighthouse technology made possible, according to Professor Edgerton, by pioneering efforts of the Aids to Navigation Division of the U.S. Coast Guard.

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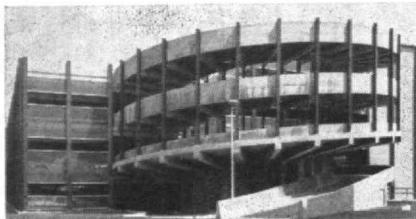
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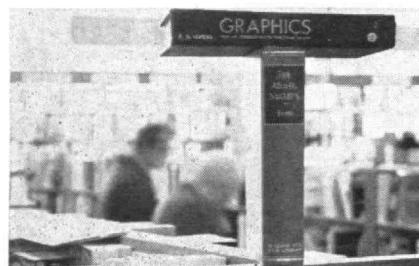


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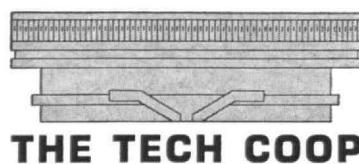
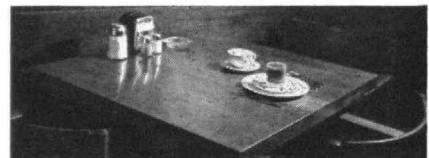
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An Architectural Goal Achieved *(Continued from page 18)*

Primary power is brought into the building at 13,800 volts and the refrigeration machines are operated at 2,300 volts. Building service machinery motor loads are supplied at 480 volts from a three-phase system which also provides 277 volts for the fluorescent lighting fixtures. Power for the laboratory equipment is distributed in the raceways by a modern 120/280-volt, three-phase, four-wire system from two independent substations. To reduce radio-frequency interference, a separate substation transformer provides single-phase or three-phase power at 230 volts to a separate distribution system for high-frequency generators and furnaces operated with high-current contactors.

Three independent grounding systems also are built into the structure. A laboratory equipment ground is carried to the primary electrical systems ground through three-inch vertical conduits and is bonded to the metal raceways. All electrical outlets require modern plugs with an equipment-ground terminal. High-frequency interference generating equipment is grounded through separate cables to the ground floor structural iron girders, which are electrically bonded to the metal casings of the 600 foundation piles extending 115 feet into the earth. A third "quiet ground" system, available in all laboratories for use with sensitive equipment, is carried by separate cable to two driven-rod counter-poise ground nets at the south edge of the building.

Corridors around the blocks of interior laboratories carry some of the air-conditioning ducts which supply the laboratories with 100 per cent outside air through a high-pressure reheat air system. The back-to-back grouping of the laboratories, and dependence upon artificial lighting and a forced air supply, dictated full air conditioning. By using river water the need for a cooling tower was eliminated. High pressure air induction units bring 100 per cent outside chilled or heated air into each office.

The reinforced concrete structure is unusually heavy in order to dampen vibrations, and consists of 10 structurally isolated five-story segments 95 feet deep and 37 feet wide to minimize the transfer of vibration linearly. Recessed penthouses on the fifth floor house the building service fans and prevent the intrusion of these elements into the visual environment of the Great Dome.

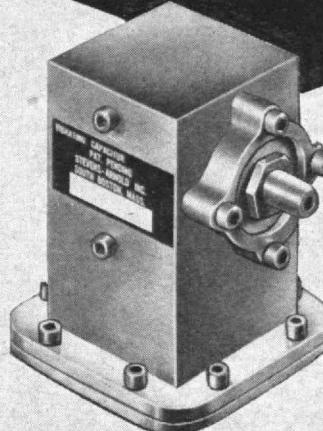
The windows of the perimeter offices are of heat-absorbing glass, 8 feet high, and are set back 2½ feet from the external columns and horizontal members at each floor level. This setback provides shading from the overhead sun and reduces sky glare from the large expanse of window glass. The window wall is a simple wood-frame type with the glass set by orthodox glazing.

Each of the four top floors provides about 30,000 square feet of space for offices and laboratories. The large building service machinery room, a machine shop and electronics construction shop, and a conference room and lobby take up much of the ground floor, yet

(Concluded on page 47)

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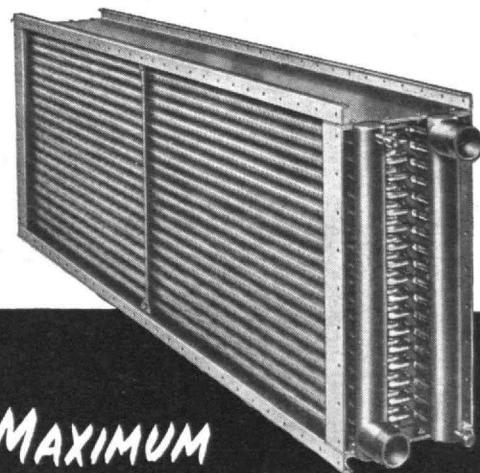
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An Architectural Goal Achieved

(Concluded from page 45)

an area is provided there for the extremely heavy equipment used in high-pressure research.

Comfortably large classrooms are conveniently located to the east of the elevator lobby on the second floor.

When you now see the dome from the north, you realize that the building directly below it is new, but the structure seems to be a part of the older M.I.T. The architectural design provides a three-part façade consisting of a pedestrian walkway, four heavy laboratory floors, and a lighter roof floor. This façade coincides in architectural character with the classical environment of base, course, and secondary cornice related to the Great Dome.

In consonance with the master plan developed for the North Campus by Architect Walter A. Netsch, Jr., '43, the Materials Center Building is so designed that it can be extended and eventually connected with Buildings 16 and 26 to the east and with the Center for

Advanced Engineering that is to be built between Buildings 7 and 33. The entrance and elevator lobbies of the new building provide for the projected importance of the North Campus as a major approach to the Institute, when future parking areas north of the railroad are connected to the campus by raised walkways. The first phase of the North Campus as now envisioned is embodied in this new structure.

Visiting Committee Named

Paul E. Gray, '54, Associate Dean of Student Affairs, discussed M.I.T.'s new undergraduate curriculum at the M.I.T. Alumni Council meeting on October 25.

The Council approved nominations for new members of the Council, the election of Gregory Smith, '30, and Harry E. Essley, '36, as chairman and deputy chairman of the 1966 Alumni Officers' Conference, and the nomination of John A. Lunn, '17, William C. Foster, '18, and Virgilio Barco-Vargas, '43, for terms on the Corporation Visiting Committee of the new Department of Political Science.

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Class News



'95

It was a pleasure to receive replies from some of our members and know their addresses: **Charles L. Demeritt**, 4500 Hudson Boulevard, Union, N.J.; **Judson C. Dickerman**, 1701 Rugby Ave., Charlottesville, Va., and **Robert D. Farquhar**, 2930 Avalon Ave., Berkeley, Calif. We wish all our '95 ten members and their families a Merry Christmas and a Happy New Year.—**Andrew D. Fuller**, Secretary, 1284 Beacon St., Brookline, Mass. 02146.

'96

Joe Harrington 3d came to see me at Technology Alumni Day and said he had returned from his trip to Austria. He is now working on the thesis for his doctor's degree. His wife and he are both well and happy; she is helping him on his thesis. How pleased our Joe would be if he were here to see his son at A. D. Little Company and his grandson here at M.I.T. teaching and studying for his doctor's degree.

Walter S. Leland writes in answer to my letter, "During recent months I have not been coming into the office except once a week; there is very little to do. I have been in partial retirement since my 80th birthday and now that the 90th isn't too far away, believe it is an appropriate time for complete retirement. I really am enjoying very excellent health. If I only had my eyesight I wouldn't retire even at 90."

Secretary made his annual visit to **George Harkness** in Dorchester, where he spends the summer; he leaves for the 24th time to spend the winter in Florida. He was not well after his Freshman year with '95, so he went to San Francisco and sailed with his father, Captain of a full-rigged ship, around Cape Horn with a cargo of redwood to England. He returned to Tech and joined our class in its Sophomore year. George, Professor George Russell and I were together as Examiners for the Massachusetts Civil Service Commission. On his next birthday, January 15, 1966, George will celebrate his 94th birthday.—**James M. Driscoll**, Secretary, 129 Walnut Street, Brookline, Mass.

'97

As too frequently happens, there has been recently no direct communication from the members of '97, but a few weeks

ago a report came from the Alumni Office, concerning the death of **Alfred M. Brooks** of Course IV, who died at Gloucester in December 1963.

There also came from a similar source a notice that **Howard A. Noble** (Pete) left in 1964 an estate of over \$800,000, all of which goes to M.I.T. as a scholarship endowment for students of engineering. This sum added to over \$200,000 left a few years ago by his wife for the "Howard A. Noble Scholarship Fund" for students of engineering makes the second largest fund for such purpose at M.I.T. This makes us even prouder of "Pete," who was our First Marshal at graduation, 67 years ago.

May I add my personal comment. I hope the Corporation will spend the money for "Engineering" not "Sciences." There is a greater present need for engineers, not scientists. The large number of men with I.Q. 120 to 140 (perhaps a poor measuring stick) are not getting enough attention at M.I.T.—**George R. Wadleigh**, Acting Secretary, 70 Flower Ave., Hastings-on-Hudson, N.Y.

'98

We regret the passing of **Frederic A. Jones**, our Class Secretary for many years. Fred, 89, of 286 Chestnut Hill Ave., Brighton, Mass., died on October 14, 1965, in Brighton following a short illness. He was born in Needham, Mass., and while living there graduated from M.I.T., then "Boston Tech" on Boylston Street, in 1898 with the degree of B.S. in the course of Civil Engineering. He became employed by the Chicago Great Western R.R. in Minnesota where he married Miss Christine Fischer. His railroading career of 50 years took him to the New York Central, the Virginian R.R. and to the Boston and Albany R.R. where he retired as Office Engineer in 1949.

Fred made a second career with his hobby of genealogy. As historian for the Needham Times, he wrote many articles about the older families of Needham and he helped to procure a dated plaque for each old house. He presented gifts of interest to various historical societies and was instrumental in erecting town markers printed with historical data. He was a member of the Needham Historical Society, the New England Historic Genealogical Society of Boston and the Second Unitarian Church in Boston.

Besides his wife, Mrs. Ottlie (Blaine) Jones, Fred leaves a daughter, Audrey Jones Jones (Mrs. Harold W.) of Springfield, Mass., two grandsons, Robert L. Jones of Wellesley, Mass., and Alan F. Jones of Orange, N.J., and four great-

grandchildren. The funeral was held at the Eaton Funeral Home in Needham on October 18, with Rev. John K. Hammon officiating; interment was in the Needham Cemetery.

'00

Dr. William J. Brickley died on September 20, 1965, at the age of 91. Although he was associated with the Class of 1900 during our undergraduate years, as an alumnus he was often listed with 1901. In 1964 he attended the Alumni Reunion with 1900 and expressed the desire to transfer his affiliation to that class, which included more of his acquaintances. After leaving M.I.T., Dr. Brinkley attended Harvard Medical School, from which he graduated in 1907. In 1920 he was appointed Associate Medical Examiner by Governor Calvin Coolidge and in 1935 he was named Medical Examiner by Governor Curley. He served in this post until 1957. For several years Dr. Brinkley was one of a team of doctors from Harvard Medical School and Massachusetts General Hospital which researched the perfecting of treatment of fire victims, and his treatment of those burned in the Cocoanut Grove fire of 1942 won him national acclaim. He also gained a high reputation for his solution of murder cases and also as one of the first doctors to restore life by heart massage. He leaves two nieces, the Misses Morenski of Boston.—**Elbert G. Allen**, Secretary, 11 Richfield Road, West Newton, Mass.

'01

Most of the news comes through **Ed Davis**, who makes a few suggestions: a reunion in 1966, which I doubt is feasible, and a drive for an increase in our class fund. I am too far away to do any planning and I have not driven to Massachusetts for a number of years. The only news I have is a change in several addresses. I have had no word as to the condition of Mrs. Peterson. I presume that she is still in the hospital.—**Theodore H. Taft**, Secretary, P.O. Box 124, Jaffrey, N.H. 03452

'02

Herbert S. May, II, died September 1, 1965, at Leicester, Mass. A clipping from the Worcester Gazette gives the following information: "Mr. May, a retired business executive, died yesterday at his home. His wife, Mrs. Ellen K. (Burnham) May died June 9 of this year. He was born in Portsmouth, N.H., son of the late Rear Admiral Edward May and Mrs. Mary M. (Blodgett) May, and lived in Leicester for the past fifteen years. Previous to that he had lived in Great Neck, N.Y., and had maintained a winter home at Delray Beach, Fla. He re-

tired as a partner and treasurer of the American Rubber Products Corp. of New York City in 1948 after 25 years with the company. In 1908 Mr. May organized the Empire Model and Machine Company in New York City and in 1910 he became sales manager of the General Bakelite Corporation, a post he held for 12 years.

"He was educated in the Boston public schools and was graduated from Boston Mechanic Art School in 1898. He received a bachelor of science degree in mechanical engineering from M.I.T. in 1902. Mr. May was a member of Boston Athenaeum and the Bostonian Society of Boston, a past president and member of the Great Neck Players and a co-founder of the Community Church of Great Neck, L.I. He leaves a son, Herbert S. May, Jr., of Holden; a daughter, Mrs. Mary M. Clapp of Washington, D.C., and five grandchildren."

Our class has also lost its youngest member, Dr. Charles G. Mixter, who died Sept. 22, 1965, at his home in Brookline. Mixter was born May 1, 1882. At the time of his death he was Clinical Professor of Surgery Emeritus at Harvard University Medical School. He was graduated from M.I.T. in the Biological Department along with his brother, Jason, and then entered Harvard Medical and graduated with the class of 1906. During his professional career he had been on the surgical staff of the Massachusetts General, the Children's and the Beth Israel Hospitals and Surgeon-in-Chief at the Beth Israel and had served as consulting surgeon to others. He served in World War I with rank of major. He left his wife, Helen M. Mixter, two sons, Dr. Charles G. Mixter, Jr., of Needham, and Worthington of Hartford; one daughter, Mrs. Anne M. Skinner of Long Meadow; and two brothers, George of Hardwick and Samuel of Brookline. His brother Jason died in 1958.

A letter has been received from Wade Wetmore in Alameda, Calif., "Dear Burt: Just a few lines about my life since we rode the Newburyport train of the B & M. For over fifty years I was engaged as a civil and mining engineer in the mining and oil industries. The work took me many places in the United States and Canada. I married Mabel W. McTaggart in Canada in 1919 and we have one son and three happy grandchildren. In 1950 I retired from the Union Oil Company of California and since that time we have made many enjoyable sight-seeing trips. Owing probably to plenty of rugged outdoor experience and exercise my health has been very good until the past year. Since my 85th birthday last July I decided no more driving and have remained in Alameda, except for a few short trips. With regards to my old classmates."—Burton G. Philbrick, Secretary, Salem, Mass.

'03

The recent news of the largest academic structure to be built and dedicated by M.I.T. since construction of the Insti-

tute's main buildings in Cambridge 50 years ago, strikes a keen note in our 1903 memory. This five-storey concrete and glass building for Materials Science and Engineering is now equipped for testing the physics and chemistry of solids, electronics and optics, also the strength and mechanical properties of materials at high temperatures and pressures. Our early course in this field now seems so lacking in contrast to the new standards and concepts evolved by later discovery of modern mass spectrography, x-ray analysis, optical and electron microprobe analysis, and microscopy; these epochal features can now be centered in one building.

The establishment of a Department of Political Science at M.I.T. seems somewhat remote to us, when our early aspirations embraced but solid science and engineering. Yet, due to present demands for communication in world and urban affairs, this course has become a study, embracing six areas of Political Communication and Behavior, Comparative Politics, Defense Policy, Science and Public Policy, International Relations and Foreign Policy, and Political and Economic Development. This department, in association with Harvard University Urban Studies, will have access to its Computation Center and Center for Space Research. Its ultimate scope may analyze and propose solutions to conflicts among nations.

Our Alumni on return to Cambridge on Commencement each year, have noted the flock of small sail boats by our campus along the Charles River, seemingly like a group of huge swans. This popular sport had its beginning due to A. Griswold Herreshoff, '12, XIII, of a boat-designing family, who later, however, changed to designing autos on the shores of Lake Michigan. He began talking up this sport among his classmates in Naval Architecture and wrote in 1909 that a crew for water sports would be opportune for M.I.T. He was closely associated with a Bob Emmons (owner of the Avenger) who rowed at Harvard and was a member of the Union Boat Club. "Gris" was readily invited to the Harvard Boathouse and graciously loaned a shell for the season to promote rowing on the Charles River close by. Enthused with his gift, he soon went to the Union Boat Club, who gave him and his classmates permission to keep the shell and row from there. Now apparently well-established, he approached President Richard Maclaurin for help, who soon raised \$800 for the success of the sport. The first coach was a Mr. O'Leary who assured all candidates "that the boats were safe and there was no necessity for being a swimmer." In the fifth race of the season, however, the opposing boat was swamped and the M.I.T. crew watched in wonder as their swamped crewmen swam to safety. That produced a new regulation, that future M.I.T. crewmen would have to become capable swimmers.

The present M.I.T. boathouse at Cottage Farm Bridge was built 66 years ago and acquired by M.I.T. in 1922.

This popular sport has now reached

its zenith by a grant of \$500,000 from the Harold Whitworth Pierce Charitable Trust. The new boathouse will have an indoor rowing tank for training during winter months, an adjunct to all intramural sports. On completion along the Charles River near the Baker and Burton Houses, it will have storage facilities for 48 shells and 10 wherries. The indoor rowing tank incorporates a pumping system that moves water past a stationary eight-oar shell at speeds of 16 to 18 feet per second. This will enable crews to reach 34-38 beats per minute in tank drills.

A note from Ike Atwood, II, our Counsellor, that he has recently returned from another of his trips—now from Canadian scenes.

Paul R. Parker, XIII, still resides at 57 High Street, Kennebunk, Maine. . . . Leroy L. Hunter, I, has a new address, c/o James O'Keefe, 38 South Dearborn St., Chicago, Ill. . . . George B. Seyms, II, has passed away at 222 Orchard Way, Wayne, Pa., with no information as yet.

Our birthday greetings go to Louis W. Graves, II, of 111 Tillinghast Pl., Buffalo, N.Y., for his 85th milestone on July 24.—John J. A. Nolan, Secretary, 13 Linden Avenue, Somerville, Mass.; Augustus H. Eustis, Treasurer, 131 State Street, Boston, Mass.

'04

There is no news to report. Your Secretary, Carle R. Hayward, is still comfortably situated in the Wellesley Manor Nursing Home in Wellesley, Mass. Your Treasurer has been visiting him and generally keeping in touch with Carle and Mrs. Hayward.—Eugene H. Russell, Treasurer, 82 Stevens Road, Needham, Mass.; Carle R. Hayward, Secretary, 120 Beacon Street, Boston.

'05

G. W. C. Whiting, I, of Baltimore, Md., writes, "in spite of the fact that the Technology Review lists me among the deceased, I am happy to say that I am still alive, . . . maybe not 100%, being deaf and blind, but at least breathing. I look forward to having read to me the full report of the 60th Reunion from the November Review." That's the old spirit, George! Many of your old classmates will rejoice in your "resurrection."

Class secretaries know how difficult it is to get news for their column in the Review. There are devious ways, sometimes sneaky, but "the presses must run." It is particularly difficult in the case of the death of a classmate, in a faraway spot, and of one with whom we have not been in contact. This happened in the case of Dick Senger, whose death I reported in the November issue. I had just a notice of the date of death. I remembered that there was a lady in our town who had a son who joined the Mormons a few years ago. She gave me his address and I sent him an appeal. Soon there

came a copy of a Salt Lake City newspaper containing the obituary I wanted. At about the same time I received from a Bank and Trust Company in Salt Lake City an obituary from another Salt Lake City paper in accordance with a request from the late Richard W. Senger prior to his death. I am submitting a transcript from these two obits:

Richard Warren Senger, 86, retired mining and smelting industry executive and a resident of Utah for the past 50 years, died Friday night of natural causes in a Salt Lake City Hospital.

Mr. Senger, who never married, lived at the Alta Club since his retirement in 1947 . . . After graduating from the Port Jervis High School in 1895, he visited an uncle, . . . who founded the Colorado Fuel and Iron Company hospital in Pueblo, Colo. As a result of this visit, he started working in the steel plant laboratory, became interested in metallurgy and entered the Massachusetts Institute of Technology.

After graduating from M.I.T. in 1905, he worked for two years for the Greene Cananea Copper Company in Mexico, and then took a position with the American Smelting and Refining Company at its El Paso, Texas, plant. He subsequently was transferred to properties of that firm in Mexico and was transferred to the Garfield, Utah, smelter in 1915 when operations in Mexico were suspended because of revolutionary activities . . . In 1940, Mr. Senger was appointed director of technical employment and training for all U.S. units of the company. In 1947, upon his own request, he was retired. He was a Thirty-Second Degree Mason, Scottish Rite, and a member of the Shrine; a member of the Alta Club and University Club in Salt Lake City; the Engineers Club, Mining Club and the Mining and Metallurgical Institute in New York.

Prince S. Crowell, X, after stating that he was too busy "boating and racing every weekend" to attend our 60th, says that, on that particular weekend, June 10-11, he was racing in the final event of the season, a 20-mile course off Falmouth, Cape Cod. He was ahead the whole course until the last eighth of a mile, when his grandson headed him off and won by 12 seconds. He says, "I was glad because my name was the first on the Veeder Cup and now my grandson, Prince Sears Crowell 3d, foots the list." I am sure those who knew Prince so well will be interested in this clipping from the Falmouth (Mass.) Enterprise (8/6/65). "In the three days of competition, Mr. Crowell at 84 outsailed and outmaneuvered his keen competition, thirty 18' Knockabout Class boats, and used his unmatched experience with Vineyard Sound tides to come from behind in the season's standings in the final day. Winning his class championship is nothing new for Mr. Crowell. He did it in 1940 in 'Sprite' when a record number of the 62 sloops from eight clubs competed in Hyannis. He did it again in 1958, sailing 'Imp.' Skipper Crowell defeated 30 of the best Knockabout skippers in the Cape Cod area. Mr. Crowell learned his tides at an early age by sailing mail to the

lighthouse keeper at Tarpaulin Cove. The victory for Mr. Crowell was a happy time for all of yacht racing."

In searching back into our fifty year (or more) old records, I ran across a photograph of my thesis work. Ned Broad, II, and I were doing a thesis on "The Line of Resistance in a Concrete Arch." During the early Spring of 1905, we had built into the testing forms in back of Engineering B a reinforced concrete arch. It was quite a job, mechanically, but we had it set in time for the "curing." Everything was in proper condition for the proper testing—tomorrow. During the night someone, maybe a practical joker, got in and turned the water pressure on full force. In the morning we found it just like the cookie crumbles. Too late to build and have set another arch. The rest was improvisation. Professor Miller helped us, we did some work on an old arch, using a smaller press in Engineering A. Enough to allow our thesis to pass. Incidentally it gave Ned Broad more daylight time to help the Stanley Brothers develop their first "steamer." He had been working on it every moment he could get for three years.

Finally got a line on Fred Abbott, V. He writes, "Yes, I am in good health and spirits. I retired six years ago but now and then I do a little research. Remember me to the fellows."

When I was in Texas with Willard Simpson last Spring, Willard had made up a typewritten list of the living (active) members of our class with addresses. I have a few lists left. In order to encourage you to correspond with your classmates (and thus perhaps create news for the Review) I will send them postage paid as long as they last. You have by now received a folder regarding the 1965 and 1966 Alumni Fund. If you have read it you have noticed the '05 had the highest percentage of givers for 1965 of all classes 1879-1910. Let's try to keep it that way and thus show our appreciation to Bob McLean, our Class Agent. Then if any of our millionaires would surprise us with a very splendid amount and raise our volume, we might be up with the leaders in the total amount given. Bob has done a wonderful job over many years and I thank him again.—Fred W. Goldthwait, Secretary, Box 32, Center Sandwich, N.H.; Gilbert S. Tower, Assistant Secretary, 35 No. Main St., Coopersett, Mass.

'06

A year ago in the December notes, you may recall, was a reference to the Alumni Fund report and the relatively poor showing by our class that year. It was gratifying then to receive Sherm Chase's letter of October 4 as Class Agent for Fund Solicitation, showing a marked improvement, percentagewise, in the class standing, being sixth among the top ten classes. Since that letter came I have done some figuring, and it is quite apparent that we have no classmates now

Happy Birthday

During December one alumnus will celebrate his 95th birthday; two will become 90 years old; 10 will reach their 85th mark; 20 will begin their 80th year.

December, 1870—STETSON G. HINDES, '88, on the 6th.

December, 1875—DONALD N. ALEXANDER, '98, on the 21st; MABEL F. LAMBERT, '98, on the 25th.

December, 1880—MORTIMER L. NAGEL, '02, and ISRAEL P. LORD, '04, on the 12th; WILLIAM M. GILKER, '03, on the 13th; FRANK LOGAN, '06, on the 16th; FRANK H. DAVIS, '04, on the 22nd; EDWARD S. MORRISON, '04, on the 23rd; PERCY R. FINER, '04, on the 24th; STANLEY A. FOSTER, '03, and HOWARD T. GRABER, '03, on the 29th; LEWIS NEWELL, '04, on the 31st.

December, 1885—ERNEST S. ALTGELT, '07, and W. M. VAN VALKENBURGH, '09, on the 4th; FRANK J. ROBINSON, '08, on the 5th; CHANNING TURNER, '09 on the 6th; WILLIS H. MASON, '08, and F. GARDINER PERRY, '09, on the 7th; JAY W. CILLEY, '10, and PHILIP G. LAURSON, '10, on the 10th; CARL S. BLOEDE, '08, and EDWARD D. MERRILL, '09, on the 11th; LOUIS A. FREEDMAN, '07, and WARREN I. KEELER, '07, on the 12th; BRADFORD B. HOLMES, '08, on the 14th; HAROLD D. REED, '07, on the 16th; JOSEPH C. DORT, '09, on the 18th; ROBERT I. HULSIZER, '09, on the 23rd; J. NYE RYMAN, '09, on the 24th; HOMER C. BENDER, '09, on the 25th; CHARLES F. DOBLE, '10, on the 26th; CLAUDE O. BROWN, '08, on the 29th.

in the "higher income brackets," for the average gift to the fund by the 58 contributors was 28 dollars. The average contribution by each of the six classes having a higher percentage of giving ranges from just under 100 up through 100 and 200, with one class averaging well over 900. You will soon be thinking about your "Christmas List." Is the Alumni Fund on your list? Why not make it a generous gift this year, if you have not already done so, and help increase our average as well as our percentage!

Also a year ago the next item in the notes was about a card from Anne and Bob Rose, XIII, who were homeward bound on the White Heron after their sojourn at the New York World's Fair Marina. Marion talked recently with Anne, by phone, and we learned that they had spent two months on the boat this summer, but Bob had just returned home after being in drydock for a couple of weeks for repairs; he can't navigate (drive the car) for a while as the trouble was in his legs. . . . I have just had a chat with Jim's sister Mary and the report is always the same—not much change. Frank Benham and I had been in and Jim knew him and talked with him briefly. Send Jim a postcard now and then—some historic place or an interesting view. . . . Betty and Stew Coey, VI, after another summer on Squirrel Island, are settled in their new home, which they share with daughter and family. The address is Wildwood, Wilmington, Vt.

05363, where the "deer come out of the woods to have a look at us, also rabbits and ground hogs." Betty had mentioned an article in the November 1964 Yankee magazine entitled "The Last Voyage of the Thomas W. Lawson." I found the article, which I had missed. As Betty had said, it was written by an Edward Rowe of Annisquam, Mass., in collaboration with the only other survivor of that seven-master when the ship was wrecked off the Scilly Isles in 1907. That Edward Rowe (deceased) was no near relative as far as I know, but some of my near relatives were closely connected with that ship, launched at Quincy in 1902. My grandfather's firm, E. L. Rowe & Son of Gloucester, furnished the sails and all the rigging for her; she was the only seven-master ever built.

The death of **Ralph Omer Reed III** (SB '09) on July 22, 1965, was reported to the Alumni Office by his daughter, Mrs. E. A. Howard. Ralph was with '06 until senior year and later returned to get his degree with '09. He has, however, preferred to be affiliated with our class and sent information to **Jack Norton** for our ten-year history. His home address had been Melrose, whence he probably had commuted. He reported that for three years he had been manager of the appliance department of the Malden & Melrose Gas Light Company, and I suspect that was during 1905-8, for after graduating he was in mining in Mexico for about three years; in 1910 he was with the Cortez Associated Mining Company in Jalaca, Hidalgo, and in 1913 was with the American S and P Company in Velardens, Durango. He evidently didn't find mining to his liking, for by May 1915 he was an industrial engineer with the W. H. McWelwain Company in Manchester, N.H. By or before 1920 he had become factory manager with Biddle and Smart in Amesbury, Mass., and his address was Amesbury until along in the '30's, when he evidently retired to Beverly, Mass., at first on Essex Avenue and since '55 at 2 Newbury Street. In 1915 he married Lillian H. Hildreth.

These notes are being completed on October 14 after we returned from a three hour-ride through the middle of the Old Bay State, guest of friends, and everywhere we raved over the most glorious fall foliage I think I have ever seen. So I will close with the same thought as a year ago: As I look out at the colorful autumn foliage it is hard to realize that when you read these notes Christmas will be in the offing. With our best wishes to you all for a Happy, Merry Holiday and a New Year full of interest and satisfaction, from Marion and—**Edward B. Rowe**, Secretary-Treasurer, 11 Cushing Road, Wellesley Hills, Mass. 02181.

'07

When **Bryant Nichols** was secretary, he purchased a number of binders which held booklets of sheets of heavy paper, 10" x 15". These binders are the Archives of the Class of 1907, M.I.T. Each one of the 511 original members of our class

has one of these booklets assigned to him. A senior portfolio has been cut up and the individual's photo pasted on the front of his booklet. Then any printed, published, or written literature, including photographs, that I obtain which is pertinent to a member's life history is mounted in his individual booklet. This is the reason I have asked so many times for information about yourself or other class members. After you have read this, send me newspaper clippings, notes, or articles that I may have our Archives as complete as possible when they are turned over to the Alumni Association after the last member of 1907 has gone to his final resting place. As I learn how many of the class have been active in civic, religious, or fraternal work, I realize how interesting these booklets could become if I could only get the material to put in them.

During our undergraduate days, and while working in the drafting room, I became well acquainted with **Ed Lee**, as we both were in Course I, and our drafting tables were only an aisle apart. Since becoming Secretary, I have written to Ed several times and learned some of the activities he has been engaged in during the past half a century. After graduation, Ed spent ten years designing and building dams and installing water power equipment in New England, Northern New York State, and Eastern Canada. During World War I his time was spent on the construction of two hydro developments in South Carolina. He later returned to Maine and worked on the Gulf Island Development on the Androscoggin River for the Central Maine Power Co.

Tucky Noyes worked in their Augusta office at this time. In 1928 he went to work for the New England Power Service Company and remained with them for 22 years, when he was retired at the age of 65. While living in Wakefield, Ed served on the Town Finance Committee, a school building committee, and on the zoning board. After his wife's death in 1956, he moved to Florida where his two married daughters have their homes. He has an unmarried daughter living in Cambridge. . . . A note from **Willis Waldo**, I, from Florida tells of his change of address and that he continues "active as ever." He is in construction work and holds several "jobs" at the First Baptist Church in West Palm Beach. Another '07 man who realizes "that here is not our abiding place." . . . In the note telling me of his change of address, **Arthur O. Christensen** added the information that his oldest grandson had become a father, which made Arthur a great grandfather. Congratulations, Arthur! He also sent me a copy of the article he has asked the Technology Review to publish on "Pre Cambrian History."

Changes of address are still coming in. Please make the following notes on your copy of the Class Roster that I mailed to you this past summer: Mr. **Arthur O. Christensen**, 1509 West St., Beaufort, S.C.; Mr. **Willis G. Waldo**, r. 305 Barcelona Drive, West Palm Beach, Fla., b. 2080 Indian Road, West Palm Beach, Fla. The change of address for **Maurice Pease** appearing in the November Re-

view was his summer address only. Please keep his winter address, Lincoln Lane, New Britain, Conn., as the one to send mail to. Maurice writes that he leaves for Florida by the end of November and his address there is Starfish Avenue, Seagate, Naples, Fla. . . . In an earlier review I reported receiving a letter from a nurse in a hospital in California stating that **Fred Menner** was very sick and unable to read or write. I wrote to this hospital in September and had a prompt reply that Fred recovered from his very serious illness and is now living with Mrs. Menner at the address in California I gave for him in the November Review.

I had an interesting note from **Herb Eisenhart** from Rochester, N.Y. Herb retired some fifteen years ago from active business but finds his time well taken up as he serves on several banking and corporation boards, as well as educational and charitable institutions. He has a family of three children and seven grandchildren, which adds daily interest to life. Herb sent me a check for our treasury. Thanks.—**Philip B. Walker**, Secretary and Treasurer, 18 Summit Street, Whitinsville, Mass.; **Gardner S. Gould**, Assistant Secretary, 409 Highland Street, Newtonville, Mass.

'08

Joe Wattles and **Nick Carter** attended the 6th Alumni Officers Conference on September 10 and 11 at Cambridge. Meetings were held in Kresge Auditorium. We were glad to see the new Student Union, just finished when dinner was served. Do you remember the old Union on Harcourt Street of our day? Some improvement.

How about the Alumni Fund for 1966. You have received **Bill Booth's** letter of October 4, 1965. Hope you will do the needful. We still need news from you fellows for future Review notes. Won't you help? Wishing you all a Merry Christmas and a happy New Year.—**H. L. Carter**, Secretary, 14 Roslyn Road, Waban 68, Mass.; **Joseph W. Wattles**, Treasurer, 26 Bullard Road, Weston 93, Mass.

'09

For the past several years the Alumni Association has sponsored "Alumni Officers' Conferences," early in September, which include not only alumni officers but class officers, alumni committee members, and several members of the Faculty. This year your Secretary represented the class. Those attending are guests of the Institute, and Baker House is available to those who require dormitory facilities. This year the conference opened in Kresge Auditorium on Friday morning, September 9, with an address by President Stratton, who summarized the present Institute educational and research programs. Among the several topics presented during the conference were the

present and long-range planning of the Alumni Association, the House system, the Technology Review, the Alumni Fund, and Student Aid. On Saturday morning the deans of the several schools described their respective departments and told of their present activities and future plans. A notable occasion was the dinner Friday evening held in the Harold Edward Lobdell Room of the new Student Center, right next to the Armory. The lounge and dining room had just been completed within a day or two so that we had the honor of "christening" the Center, being the first to hold a meeting there. The speaker of the evening was Jim Killian, Chairman of the Corporation. We urge all, so far as possible, to see this modern student center with its extensive facilities for student social life. The Technology Cooperative Society occupies the lower levels with shops which vie with Fifth Avenue. The conference concluded Saturday noon with an address by our honorary classmate, Vannevar Bush, who emphasized how the Institute had carried to high standards the earlier concepts of both liberal and technical education. An important part of these conferences is the opportunity to meet and become better acquainted with our fellow alumni and to learn what other classes are doing. For example, your Secretary met a long-time fellow teacher at the Institute, Harold Dodge, Secretary of '16. When the Institute crossed the Charles in 1916, Harold and your Secretary were instructors under Professor Laws in the electrical measurements laboratory on the first floor right under the dome. Harold did much in installing the laboratory equipment. For years he was employed by the Bell Telephone Laboratories and now, after retiring, is teaching at Rutgers University. His class has just held its forty-ninth reunion (see July Review).

We were quite shocked and saddened to receive a letter from Mrs. Ann Thornley Donle of Waltham, Mass., stating: "I am sorry to have to write that my Dad passed away on September 8. It was quite sudden and unexpected. Although he hadn't been too well for the past year, he was able to be about and remain active right up until the day before he died." Albert prepared for the Institute at the Pawtucket High School and lived in Providence and Pawtucket most of his life. For a long time he was associated with the Narragansett Machine Company and was its president until he retired in 1947. Many of us in the class obtained our tennis rackets from his company. He was senior warden of St. Paul's Episcopal Church, of which he was treasurer for forty-two years and was superintendent of its Sunday School for thirty-seven years. He held many honors such as vestryman in the church, assistant treasurer of the Episcopal Diocese of Rhode Island from 1947 until his retirement, and seven times he was deputy to the General Convention of the Episcopal Church. He was also honored by St. Paul's as its outstanding churchman of the century. In addition he was president of the Pawtucket Businessmen's Association, past president of the Rhode Island Engineering Society, a board member of the Plan-

tations Bank and other banks, a leader in civic and historical clubs. He leaves a son, Albert E. Thornley, Jr., a daughter, Mrs. Donle, and five grandchildren. While at the Institute he was quiet, studious, and conscientious, and was well liked by everyone. He always maintained his interest in the Institute and the class. As we all may recall, he attended our class reunions regularly, and was present at both our fiftieth and fifty-fifth reunions. Only last summer he wrote us telling of the death of his close friend and former classmate, Ray Temple (November Review). The class has lost a devoted and faithful member. We have written to Mrs. Donle expressing the sympathy of the class as well as our own.

We have also received a notice of the death of another classmate, William G. Fick, II, who died March 15 at Passaic, N.J. He prepared for the Institute at Mechanics Arts High School in St. Louis, Mo. While at the Institute he was a member of the Mechanical Engineering Society and the class tug-of-war teams. He performed his thesis, "Study of Ignition on a Marine Gasoline Engine," with our good friend Mex Weill. Our records show little of his activities since graduation.—Chester L. Dawes, Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass.; Assistant Secretary, George E. Wallis, Wenham, Mass.

'10

Malcolm B. Hall of Foxboro, Mass., passed away on August 22, 1965. He was a pioneer employee of the Foxboro Company. He was associated with the industrial instrumentation firm for nearly 50 years. He was director of training when he retired. At the time of his death he was serving his second term as a member of the township board of assessors. He formerly served two terms on the school committee and was a member of the Foxboro playground committee and the building committee for the Southeast Massachusetts Regional Vocational Technical High School now under construction.

I find that I have so many notes to include in the Review that rather than put them all in one issue, I will distribute them throughout the next six or seven issues. The reason for this amount of class information is that my stamped envelope, which was included in the class letter, brought forth more replies than I expected.

Harold C. Manson writes: "I am delighted to receive the notes of the reunion from you and Jack (Babcock). Those of us who attend get a great kick and those who do not attend should decide now to attend in 1970. As for Russ Hast-

Deceased

- PHILIP B. DAY, '93, June 21
- JOHN R. BUCK, '97, September 7
- FRED L. HAYDEN, '98, June
- FREDERIC A. JONES, '98, October 14*
- DAVID H. HAYDEN, '99, June 4
- WILLIAM J. BRICKLEY, '00, September 20
- JOHN M. HIGGINS, '00, April
- HERBERT S. MAY, '02, September 1*
- CHARLES G. MIXTER, '02, September 22*
- HARRY T. ROLLINS, '04, October 15
- THEODORE P. MOOREHEAD, '05, October 1
- COLBY DILL, '06, August 8
- RALPH O. REED, '06, July 22*
- WILLIAM G. FICK, '09, March 15*
- ALBERT E. THORNLEY, '09, September 8*
- RICHARD F. GOODWIN, '10, October 3
- MALCOLM B. HALL, '10, August 22*
- FRANKLIN OSBORN, 2d, '11, October 1
- WILLIAM A. CANADAY, '12, April 15*
- FRED L. FRANKS, '12, June 21
- JUNIUS P. LEWIS, '12, March 4*
- KARL R. BRIEL, '13, September 26
- LESTER C. GUSTIN, '13, September 23*
- HARRY S. WRIGHT, '13
- JOSEPH BEAUDETTE, '14, September 29*
- THOMAS N. TOLAR, '15, October 24
- STANLEY D. WHITFORD, '15, August 6
- EDMUND A. WHITING, '15, October 12
- MORRIS B. SANDERS, '16, September 21*
- JOSEPH K. PEARSON, '18, August 1*
- DONALD H. LOVEJOY, '19, July 16*
- NORMAN R. CATE, 20*
- ALEXANDER A. NIKITIN, '20, May 17*
- ALBERT L. EDSON, '21, October 21
- ARTHUR E. PEW, JR., '22, January 18
- ROBERT P. RUSSELL, '22, May 28*
- RAYMOND V. WOOD, '22, July 11
- ROBERT P. BOLSTER '23, August 4
- RALPH W. HEMENWAY '23, August 23
- HERMAN F. PIKE, '23, October 4*
- LAWRENCE S. CUSOLITO, '25, August 25*
- GEORGE W. ELKINS, '25, May 8*
- MAC LEVINE, '25, October 11*
- DENNIS R. SCISCENTO, '25, May 10
- WILLIAM P. HINCKLEY, '26, April 14*
- WILLIAM R. FREDERICK, '27, February 3
- THOMAS C. GRIER, '27, August 16*
- SAMUEL B. SMITH, 2d, '28, July 12*
- ROLF H. MARTENS, '29, July 27
- ELMORE EGGLESTON, '30, June 13*
- JOSEPH GOODWIN, '30, April 27*
- ROBERT HENDERSON, '30, May 22*
- LOUIS G. LAPOINTE, '30, July 3
- MYRON G. RIDLON, '30, August 31*
- FERDINAND L. ROUSSEVE, '30, July 18*
- CHARLOTTE WINNEMORE, '30, July 29*
- HENRY G. JORDAN, '31, July 4
- FREDERICK J. POWERS, '32, September 2*
- JOSEPH C. GORA, '33, September 7
- WALTER C. WOODING, JR., '34, October 1
- CHARLES E. CREDE, '36, December 29*
- HOMER HABERLAND, '36, September 16
- DEAN A. PIPER, '36, August 12*
- EDMUND R. NALLE, '38, September 30
- ERNEST P. NEUMANN, '38, September 24
- JOHN H. TINLOT, '43, September 28
- WILLIAM RUSSELL LINDSAY, '46, August 16*
- H. BARTEL WILLIAMS, '47, July 13
- ANTHONY RANTI, '54, September 12
- JAY E. CURRIE, JR., '60, July

*Further information in Class News

ing's picture, he did a wonderful job. Also your man Jordan's reproduction shows how good the original was and what good work he does. My only news item is that I reached 78 this summer and celebrated by taking to myself a beautiful bride. We both hope to attend our 1970."

Harold E. Akerley writes: "Many thanks for the reunion picture and report on our 55th. Time marches on. We look forward to seeing you at Christmas and regret having to hurry home in June. We have no news worthy of record. Instead of looking for color in New England this fall we plan to spend the first week in October in Warm Springs, Va., lolling in the warm pools."

Chester Wilson writes: "I wrote you a long letter last year (which you used) and nothing of note has happened since. Maybe a few more years ahead I might have material for another long epistle. I was sorry to miss the reunion, but it came at a time when I was many hundred miles away and it was not feasible to come back for it. Sometimes it seems as though many good events all come at once and you can't make them all. The picture was splendid and I appreciate receiving it. Many have not changed too much and others have so much that I would not know them, as you would expect. Well, this is just to say 'Hello' to you and anyone else in the class who may read and I hope I may be around and be able to make the next one."

Curtis M. Hilliard writes: "I took a graduate year in Course VII, Sedgwick's public health program, in 1910 but knew relatively few people outside that program. I was a Dartmouth graduate and have spent my entire career in college teaching, and in public health. I appreciate your sending me class material all these years and congratulate you on doing a good job as class secretary."

Frederick Crossley writes: "Thanks for excellent photographic reproduction of members of Class '10 attending the Reunion and their wives. All examined with attention and pleasure."

Jack Holbrook writes: "Many thanks for very interesting report and picture of our 55th reunion. Sorry I was unable to attend. As for me, I have very little to report. I am still unemployed, or perhaps I should give in and call it 'retired.' Best wishes from your classmate."

Charles F. Doble writes: "I am living on the Cape, having retired in '47 after selling machinery for years, here and abroad. How I ever got through the math at Tech was and is a mystery to me as I view the recent developments of this study."—**Herbert S. Cleverdon**, Secretary, 120 Tremont Street, Boston, Mass.

with which he had been associated for 35 years. He has been productively interested in his church, the parish and the diocese, serving on vestries of both the Hyde Park and the Duxbury Episcopal churches and on Diocesan committees. He has worked with national, state and local boards of the YMCA and for many years was chairman of the Y camp at Halifax, Camp Ousamequin. At present he is chairman of Camp Dennen, the Episcopal Church camp at Cedarville. Mrs. Stewart, who was graduated from Boston University in the class of 1915, has been equally interested in town and church activities and has worked in many capacities with many groups. At present she is Director of the Altar Guild and has just completed a three-year term as president of the Jones River Village Club of Kingston."

A letter from **Frank Smith** of Honolulu was devoted to speculation about old iron furnaces, particularly one in Salisbury, Conn., near where he was born. He wonders if the chain stretched across the Hudson River near West Point during the Revolutionary war was made there. . . . A letter from **D. P. Allen** said that he and his wife are continuing to enjoy life in Lusby, Md. . . . Sallie Denison sent me a clipping from the Portland Press-Herald telling of the appointment by President Johnson of **O.B. Denison**, Jr. to be postmaster of Cornish, Maine. O.B. was graduated from South High School in Worcester and in 1941 from Bowdoin College. He joined the Naval Air Corps and served 18 months overseas in the Caribbean and European theaters. He went on inactive status in 1945, but was recalled and served from 1952 to 1954 in the Korean War.

It is time to be thinking about our 55th Reunion, which will come June 11 and 12 of next year. **Morris Omansky** has agreed to head up the committee with the help of the Secretary. The reunion will be held in Cambridge, but as this is written in mid October no definite plans have been made. If you have any ideas, send them along to Morris at 9 Babcock St., Brookline, or to me. You will be receiving an "Elevener" or the equivalent after the first of the year, which will give details of what is planned. "Write to Obie."—**Oberlin S. Clark**, Secretary, 50 Leonard Rd., North Weymouth, Mass. 02191.

apartment in the town of Marblehead. His present address is P.O. Box 320, Marblehead, Mass. 01946.

A letter from **Henry Codding**, of 27 Broadale Road, Clifton, N.J., written just before the reunion, told that due to personal health conditions he and his wife would be unable to come up for the reunion. He sent best regards to all of his old friends in 1912. . . . **Wallace J. Murray** of 100 Memorial Drive, Cambridge 42, Mass., wrote that they could not be at the reunion as Mrs. Murray was having her 50th reunion at Indiana University at the same time. I often see the Murrays Sunday morning at the Old South Church, Copley Square, as we both are there during the winter. The Murrays enjoyed a trip to the South Pacific last spring and report a very interesting time.

A letter from **Jay Pratt** tells that last spring while they were in Acapulco, he developed a hoarseness and was sent home to Chicago to see a specialist at once. He reported to the Mayo Clinic in Rochester, Minn., for a check-up and it was decided to perform a complete laryngectomy (removal of the voice box). Jay was there for three weeks and this of course means that his only method of communication is either whispering or writing. He is progressing well and taking voice therapy each week. Priscilla came through this emergency in fine shape, acting as nurse, secretary and chauffeur. We shall look forward to seeing Jay at the next reunion.—**Frederick J. Shepard, Jr.**, Secretary, 31 Chestnut Street, Boston 9, Mass.; **John Noyes**, Assistant Secretary, 3326 Shorecrest Drive, Dallas 36, Texas.

'13

Greetings on Columbus Day, also Merry Christmas and happy New Year. Yes, "Time marches on." A word from our 100-yard champion, **Charlie Trull**, who is having a ball in Paris: "Just met the Secretary of the Paris M.I.T. Club, Mr. J. R. L. Williams. May go or attend their meeting, May 31." Still a single man, Charlie must be looking them over. . . . We received a very interesting letter from **Karl Briel** from Hollywood, Fla., really very nostalgic; he remembers "Blue Hills of Mass.," the Cape, the White Mountains, and the Adirondacks. He suggests an "Old M.I.T. Grads Retreat." Karl regrets that he could not join us at Falmouth for our 52nd. Later, we received a notice from the Alumni Office that Karl should now be addressed at the Baptist Home of R. I. in Newport, R. I. We shall contact him shortly. . . . **Joe Isenberg** writes that he will be unable to attend the 52nd and we quote: "As I shall be visiting my children at college during the week including June 11, 1965, I will be unable to enjoy being with you. Wishing you the best of health and a most successful reunion. Will see you in 1968 if not before." . . . It was with a very sorrowful feeling that we who assembled were not welcomed by **Lester Gustin** when we reunited at Falmouth. Our ever loyal

'12

Word has just been received of the death of **J. P. Lewis** of Greensboro, Ga., who passed away March, 1965. . . . Mrs. William A. Canaday has written me of the death of her husband in DeBary, Fla., in April, 1965. Bill and Mrs. Canaday had retired to a very attractive home in DeBary some six or seven years ago and lived a very happy life there. I stopped in to see Bill about three years ago and found that he was enjoying his beautiful garden with all kinds of blooms. . . . **Jim Cook**, after the death of his wife last spring, sold his home on Trinity Road, Marblehead and moved into a new

'11

Since writing last month's notes, which included an account of the Stewarts' golden wedding, I received from **Lawrence Bailey**, a classmate, a clipping from the "Duxbury Clipper" from which I quote: "At the time of his retirement 'O.W.' was treasurer and manager of the Factory Mutual Fire Insurance Company,

friend suffered several months of hospitalization at the Winchester Hospital with two weeks of treatment at home under the loving care of his dear wife Ethel before returning to the hospital where he died on September 23. Services were conducted for "Gus" at the First Congregational Church of Winchester. Lester Gustin was one of 1913's most loyal and generous members. He conducted a most lucrative steel business following his graduation from M.I.T. He built and operated the only apartment house in Winchester, Mass. He became a winter resident of St. Petersburg, Fla., where he supervised the erection of one of the most beautiful cooperative apartment houses and was the owner of two apartments. Lest we forget, "Gus" spent many weeks on research of the activities of the Class of 1913 while we were undergraduates and successful alumni. Lester compiled the M.I.T. "History of the Class of 1913," which he published and distributed. He mailed a copy to every member of the Class at his own expense. Mere words cannot express the real feelings of us who knew that great, versatile brother we have lost. To his loyal wife Ethel, sons Gus or Lester Jr., and James, we of 1913 extend our most heartfelt condolences.

... Dr. Fred Lane reports that, although he had planned for a long time for he and his dear wife to reunion with us, an unexpected but temporary disability makes it impossible for him to make a long trip. We can expect to see the Lanes in 1968. ... Arthur Hirst sends greetings to our reunioning group, but they expect to be away celebrating their Golden Wedding Anniversary with another couple at the same time as our sojourn at Falmouth. Congratulations. We shall be looking for the Hirsts in 1968. ... A quite voluminous communication had been received from Arnold Wahl. It contained an invitation to the marriage and reception of his daughter Rosemarie to Dr. Miroslav Synek on June 12, 1965. The bride is an M.I.T. graduate of 1956. She received her M.S. at the University of Chicago and will shortly obtain her doctorate in microbiology. Arnold's son, Dr. Arnold Christian, is also a graduate of the University of Chicago and has accepted an assistant professorship in chemistry at the University of Wisconsin. Arnold, 1913 shares the honors with you in the successful careers that our families have achieved. ... Dave Nason states: "Right now I think I have as good a chance to reunion in 1968 as anyone else." ... Bill Mattson certainly has the right philosophy on how to stay young. We appreciate the regular letters we receive from Bill. We are especially pleased that Bill and Jo are planning on joining us at our 55th. They were missed at our 52nd. Speaking of "sweet-hearts of the Class of 1913," our vote goes to Mrs. Marion Rice Hart. About the 8th of September your Scribe was listening to radio station WHDH, and Fred Cole mentioned in his broadcast that a 72nd gal by the name of Hart had just arrived in Bermuda in her single-seated plane from Nantucket, Mass. Fred Cole was contacted and he confirmed the news of Marion's solo flight. She does not write as often as

she flies. ... George Bakeman forwarded a few candid shots, taken at Falmouth. The photos were very well executed, considering the subjects. Everyone who has any photos or movies of previous reunions should plan to collect, possibly mount them or put them in proper media for exhibition at our 55th. We have continued our friendship with the Class of 1916, mainly through the kindness and regular correspondence with Jim Evans of that class and assistance of our Gene MacDonald. Jim has forwarded a copy of the Technique of 1912 along with a well-preserved 1913 Technique. If anyone has a copy of 1911 or 1914 to add to our library or our "Hobby Show of 1968," it will be welcomed. ... Clarence Brett always has news. He and Ruth could not make the reunion at Falmouth and the 'Stute this year, but they expect to join us in 1968. Also, he has seen Gil Pardy lately, and Gil looks well and hardy, so we can expect to see Gil at our 55th. ... It is always a joy and a pleasure to hear from Marguerite Kelly. Prescott has had so many battles, in and out of the hospitals that he deserves a medal. Still, he is rugged and expects to be with us in 1968. ... It is with a great deal of satisfaction to us that Larry Hart continues to be one of the outstanding members of the Class of 1913 and he writes: "We have Mathew Todd Tompkins, great-grandson, born Sunday, May 2, in California. Mathew is the son of our oldest grandson, Robert William Tompkins, who is the oldest son of Bunny and Bob Tompkins. And, in this connection it is of interest to note that Daughter Bunny attended our 25th Reunion in Cambridge at the Commander Hotel with us. It was a glorious week-end. ... We shall never forget that wonderful Sunday outing which was presented to all of us by Joe Cohen and his wife. May God still bless them both. ... Thanks again to you and Roz for your wonderful letter and the picture from the 52nd Reunion." Yes, we shall expect to see both Arry and Larry soon. Well, boys and girls, thus endeth our lesson for today. The returns of Class Dues has been very gratifying, so next month we shall give you the comments and news received in connections with the paying of \$2.00. If you have any urban renewal problems, we shall be very happy to assist you or yours with no strings attached or grants provided.—George Philip Capen, Secretary and Treasurer, 60 Everett Street, Canton, Mass.

'14

A clipping from the Boston Herald of September 30, 1965: "Joseph Beaudette, 77, of Watertown, retired president of Beaudette Co., Inc., of Watertown, died yesterday. The Watertown firm distributes photocopying machines and supplies. Mr. Beaudette, a native of Dover, N.H., lived in Watertown for 30 years and moved to Florida 10 years ago. He was a member of Daloufi Lodge of Newtonville and Aleppo Temple Shrine. He leaves his wife Ruth (Gallagher); three

sons, Joseph, Jr., of Wellesley Hills, Charles G. of Sudbury, and Raymond P. of Buffalo, N.Y.; four sisters, Mrs. Leda Routhier of Central Falls, R.I., Mrs. Joseph Caron of Haverhill, and Mrs. Albert Boucher and Mrs. Mabel Fogerty, both of Pawtucket, R.I. Services will be held tomorrow in Deland, Fla."

The sympathies of the class are extended to the family. The address is 218 South High St., Deland, Fla. We might note that before joining the class of 1914 Joe spent several years at Worcester Tech.

A number of changes of address have accumulated in the past months: Thorn Dickinson, Elk Lake Lodge, Blue Ridge, N.Y. 12813; Arthur W. Johnson, Boca Verde Apts., Apt. #606, 300 NE 20th St., Boca Raton, Fla. 33940; Te Ping Hsi, 144 Avis Avenue, Lakewood, N.J. 08701; Fay W. Williams, Security Realty Company, 44 Vernon St., Springfield, Mass.; Roswell F. Barratt, 776 Pequot Road, Southport, Conn. 06490; David F. Gould, Sunset Rd., RD #1, Burlington, N.J. 08016; John C. Morse, 4907 Ft. Sumner Dr., Washington, D.C. 20016; Reeves Newsom, Scarsdale Apts., Garth Rd., Scarsdale, N.Y. 10583; Chester H. Ober, 21 Park Lane, Darien, Conn. 06823; Frank S. Somerby, 14 Blake Lane, Hampton, N.H. 03842.

Frank used to be a near neighbor when your Secretary lived in New Jersey. His move to New Hampshire is in the direction of a family origin, but he assures us that he still expects to keep active in Florida for a substantial part of the year. ... We had a call recently from Al Hill, who had been spending some time in Maine and who was about to return to his home in Santa Ana, Calif. He reminded us that we had forgotten to return to him the snapshots he had loaned us at the time of the death of Claire Ricker, for which we were embarrassingly apologetic.

Fourteeners in the news: Forbes Magazine a couple of months ago had an article on the Douglas Aircraft Company in which Donald W. Douglas, its founder and now chairman of the board, is featured. His M.I.T. education is noted.

... Just a word in closing. Please don't forget your 1966 Alumni Fund contribution. Dinny Chatfield tells me that the 1914 record for 1965, while not quite up to our extra-effort 50th anniversary total, was still very respectable. Let's keep it up, and also give a little planning thought to Alumni Day in June. If you haven't been able to get back to look around the ever-expanding Institute lately, you owe it to your education to do so and as an added bonus for those who really went to "Boston Tech" there's an eye opener to see the new Boston in the making, from the Prudential Center near the site of the old Rodgers and Walker to the numerous large structures which are still going up all around the old town. Yes, Scollay Square is gone.—Herman A. Affel, Secretary, Rome, Maine. Mail: RFD 2, Oakland, Maine 04963; Ray P. Dinsmore, President, 9 Overwood Rd., at West Market Street, Akron 13, Ohio; Charles H. Chatfield, Alumni Fund Class Agent, Assistant Secretary, 177 Steele Rd., West Hartford, Conn.

Echoes of our famous 50th Reunion are still ringing to remind us of what a glorious time we all had together. Excerpts from the many nice letters I have received follow. But, in all modesty, I cannot honestly nor fairly accept the accolades and plaudits of these warm and friendly letters. It's rewarding, in itself, to have such wonderful expressions from your Classmates. Many, many thanks. But, I must share all this with our Reunion Committee, the valiant Course Representatives, Mona Lacy and her Ladies Committee, and the fellows who took over at Coonamessett. For, all these worked hard, willingly and smilingly to make our reunion so enjoyable and successful. **Phil Alger:**—"The Reunion was most pleasant and I made dates to see or keep in touch with several of those who came." On June 22, in Chicago, Phil spoke before the American Society of Electrical Engineers on "The Onward March of Ethics." He is one of three authors of a new book "Ethical Problems in Engineering," his brief description of which follows: "More and more, engineers are being called upon to fill positions of great responsibility, as managers, directors, and presidents of large organizations. This has come about because engineers, by and large, are ethical as well as capable, but this gradual elevation of the engineering profession can continue only if the profession continually upgrades its ethical standards. It is said that a large proportion of recently appointed heads of industrial organizations are engineers, and that each year the proportion of engineers is one per cent greater. It appears, in fact, that in the long vista of human history the soldier was at first the top man, then the priest or minister, then and recently the lawyer, and now the engineer is taking over. In fact, the modern engineer must combine the ministerial function of showing the way to his business associates in the field of ethics, as well as taking the lead in organizing men and materials for constructive purposes."

Maurice Brandt:—"It was with deep regret that I was unable to get to our 50th Reunion. A business trip a few weeks before, and another trip the week before our reunion left me a bit too tired for the trip and all the attendant festivities. I am in good health and have avoided any heart trouble by not overdoing it, so I considered it the part of wisdom not to overdo it. But I did terribly miss being there and seeing you and all the classmates at the Cape. And then that quart of lunar ambrosia!" We all missed Maurice. . . . **Earle Brown** wired us at the Cape:—"I regret that my recent operation makes it impossible to travel to the reunion at this time. My thoughts will be with you all on the Cape and in Boston. My best wishes for a wonderful time together and I certainly will be with you in spirit. Best Regards to all." Then Earle followed that with a letter. "I sure was glad to receive your letter full of cheer and good wishes. Next to being at the reunion your letter was greatly appreciated

and enjoyed. I read the Technology Review over the week end and thought of all the classmates." . . . **Jerry Coldwell:**—"I think you and your committee, particularly you, did an excellent job on our 50th Reunion. The smoothness with which the whole affair went off bespeaks of much careful planning; such things do not automatically happen! You even arranged to have Sunday's rain during the least upsetting period! It is a long time since I have been as cold as I was at lunch on Monday under the tents. I didn't even have a raincoat—at a misguided moment I had checked that. However, the day was well worth the minor discomfiture and the concert in the evening was a fitting climax. Our 50th Reunion was an affair long to be remembered and reviewed with great pleasure. We drove down on that Tuesday afternoon and by Wednesday were back in the routine here. Verta joins me in sending our best to you and Fran; didn't get to see her as much as we would have liked. She seemed to have somebody to take care of most of the time. Perhaps that goes with being the wife of such an efficient and well liked Class Secretary!"

Henry Daley:—"My sincere thanks for the classic snapshot of the Pirate and yours truly. I had no knowledge of the picture being taken otherwise I might have borrowed a toupee, to avoid the resemblance to 'Mr. Clean.' Like all who attended our 50th Reunion, I am sure it was an event none of us will ever forget. You and your committee deserve the gratitude of everyone for staging such a memorable event. The class picture is, without question, the finest group picture of any class reunion I've ever attended. The detail is so clear in spite of the dull cloudy day. Quite a contrast with the picture taken at Snow Inn 5 years ago, I must say. Do have a nice Summer, Azel, and the very best to your Fran and yourself from us both. We are looking forward to the 75th(?)". . . . **Class President Jack Dalton:**—"I can't close the file on our 50th without again telling you what a wonderful job of organization and execution you did to make it the very great success it was. True there were several others who helped and should share in the accolade but it was you who had the responsibility for the carrying out of the infinite number of details or seeing that they were carried out. Ben, for his part was superb and deserves our heartfelt thanks. I am writing separately to him. The annoying things which happened, difficult as they were, will soon be forgotten, in the overwhelming number of things which couldn't have been more satisfactory. I know you must have been told all this. Certainly the joy and appreciation of everyone was expressed to me. So to you and Frances who shared in all the details of your effort, to Ben who did such an outstanding job in putting the "Class Supreme" so far out in front, to Clive and Mona (to whom I have also written) and to all the committee people and those whose special contributions helped so much goes my salute and my thanks for an over-all job superbly done." In May Jack was elected to membership in the American Academy of Arts and

Sciences. The imposing list includes leaders in religious scholarships, the professions, business and international affairs. The Academy is the nation's second oldest learned society and was modeled after such European societies as the French Academy and the Royal Society of London. Congratulations, Jack, on such a high honor! . . . **Dinger Doane:**—"I did my best but it wasn't good enough. I just couldn't make it. I'd like to have seen Harvey Daniels, Ray DeLano and the Pirate." . . . With some colored slides for our records, **George Easter** wrote:—"We had a grand time and I'm glad to have had a chance to know you better." . . . **Ellis Ellicott:**—"I suppose you wonder what became of me on Monday, the 14th, but as an aftermath of the festivities on Sunday, including particularly the sea food dinner, I woke up Monday morning with a fine case of hives—not uncomfortable, but making me look like a clown. Therefore, I took the next plane to Baltimore and I am now entirely recovered. I enjoyed the reunion very much, and I certainly congratulate you and the other members of your committee for the excellent arrangements. With best wishes." . . . **Grev Haslam** wired:—"Being unable to make five different places at the same time I join you in spirit and aided by pleasant memories and fine old bourbon drink your collective health and send best wishes to all, especially that loyal Philadelphia delegation." . . . Due to his recent illness **Ralph Hart** couldn't make it. The first Reunion he has missed and we missed him. . . . **Otto Hilbert:**—"1915 is fortunate to have you as Secretary. You and your committee deserve a lot of credit for our 50th as well as the earlier reunions—such enjoyable occasions and the large turnout is another indication of how much your efforts mean to the class. Again congratulations on a happy reunion." . . . **Tess and Gabe Hilton:**—"Just a little note of thanks for all you did for us, it was a wonderful reunion. Gabe just left to take one more look at Boston atop of the Prudential Building while I finished packing. Again I must try to tell you how very much it meant to me to see so many friends and the concert put the right touch to a wonderful evening. To you should go most of the credit for keeping all your '1915 children' in touch with one another. We in turn hold a special place in our hearts for you." . . . **Dave Hughes** from Topeka en route home:—"I want to thank you, Pirate and all the New England crowd for the work and careful planning which made the Fiftieth such a success. These things do not just happen to turn out well. The only thing that was overlooked was the weather. I think someone slipped on that. However, I am not doing so well in that department myself right now so should not criticize. I will be shoving off for L.A. Monday." **Henry Leeb** to Ben:—"You must be more than a wizard to pull such a very large rabbit out of the hat in the comparative seclusion of Lockport. You have my great admiration for your accomplishment, and I know all your classmates are extremely grateful to you. It was beyond all expectation and I want to tell you how much I appreciate the ef-

fort you and your committee have put into it." And to me: "Now that the excitement is over I want to tell you how much Trina and I enjoyed the reunion, and I am sure all your classmates will join me in congratulating you and your committee on a most enjoyable and efficient performance. It was really great to see so many friends again after fifty years, and in such pleasant surroundings. Our class records in attendance and in Alumni Fund contributions are due entirely to your initiative and to the hard work of those who supported you. It will be a long time before they are equalled I am sure. If you are in the neighborhood be sure to stop by. All the best to you."

With some colored slides **Joe Livermore** wrote:—"What a marvelous, rewarding time it was!! We can never thank you and the committees enough. Even the weather was made to order." . . .

Vince Maconi:—"I had a good time at our 50th. Too bad it didn't last longer! I am busy as usual working five days a week, but manage to work in two or three rounds of golf each week. Our final state senior golf match will be held at Oyster Harbors, Osterville on the 2d of October. Our wives are with us at our final outing. Marion and I expect to spend a few days at the Mountain View House in Whitefield, N.H., early in October for golf and sightseeing. We hope Fran is well. Keep healthy and happy." . . .

Boots Malone:—"You and your committee enjoyed a grand party and I had a wonderful time. It was nice seeing old friends—particularly Azel and Frances. The grass has been keeping us busy, but you city slickers would not know about that. I have had a little time out to shoot woodchucks and trap a few raccoons. Yesterday I had what I thought was a skunk in the box trap and we decided to let it out only to discover it was a coon. The coons ate our corn just a few days before we would pick it. Come by, and thank you for all your efforts." . . . **Virginia and Hank Marion:**—"Hank and I were so sorry to leave without seeing you again. We had planned to have you over, and Ruthie, to dinner with us at the Sheraton Boston. We would have enjoyed that so much—but all of a sudden Hank was very tired. We had slept late and didn't have breakfast 'till eleven. So we took it easy and packed and were ready and checked out at 3:00. We drove downtown and by Fanueil Hall to see how the new buildings and all were coming along—then he just happened to see a place to park a few steps from his old favorite place, Durgin Park. So we had lunch there, which we both enjoyed and felt less tired. Hank will really take it easy now and get fully rested. He had counted so much on making this Reunion and it meant more than I can tell you for him to be with you all for the full duration. All the encouragement you all gave him through your notes and phone calls meant a great deal. You certainly can be proud of how the whole affair went off so beautifully, because you and your committee (including Fran) had worked out all the details so well. I am writing to Ruthie Place. Hank and I join in sending Fran and you our affectionate regards."

. . . **Bill Mellema:**—"Mrs. Mellema and I both enjoyed our 50th Reunion very much. Our thanks to you and all the members of your team who did such an enormous amount of work in connection with it." . . . **Bob Mitchell** had planned to be with us and was prevented, at the last minute, by an acute attack of food poisoning. Too bad, Bob, but we're glad you recovered quickly.

Herm Morse:—"How satisfied you must feel at the way all the preparations you and your crew made for the Reunion turned out. It was swell and with the exception of an hour or so Sunday the weather man certainly tried hard to help. I didn't inspect the package Al Sampson gave me until I got out to my old home in East Bridgewater. What a fine way to remember the Reunion. Please thank Al and the ones who made this possible for me." . . . **Lucille and Harry Murphy:**—"You worked so hard for that wonderful 50th Reunion and we assure you it went off perfectly. The buses from the cocktail party to the dinner were a grand help. A fine evening and a superb concert enjoyed by all." . . . **Charlie Norton**, our Reunion "Treasurer":—"What a truly thrilling occasion! Surely one of the very high points in a lifetime. Great credit to you and also those who worked with you. But it couldn't have been possible without a group of fine men (and women) who value friendship so highly." The Martha's Vineyard Gazette gave Charlie the following send-off:—"A fiftieth reunion of a college class may arouse many different emotions. There's the comradeship persisting after half a century, the odd and echo-like renewal of old jollity, the awe of survival, and most of all, the looking backward upon youth and beginnings. Charles G. Norton can give a first hand account of the experience, for he will be off to Boston the second week in June for the fiftieth reunion of his class at Massachusetts Institute of Technology. Whatever his sensations, they'll be something he never thought of when he took the boat one morning back in 1911, bound for his freshman year."

Early in the summer, the Connecticut State Health Departments dedicated a Health Service Library in Hartford in honor of Dr. **Stanley H. Osborn**, State health commissioner from 1922 to 1959. Clipped from a Hartford paper at the time: "In the library dedication ceremonies, Dr. Osborn will be honored as a pioneer in occupational health. He will also be cited for his efforts in creating a cancer research division with a tumor registry. Dr. Osborn was also an early champion of fluoridation and was influential in the installation of fluoridation at the Southbury Training School in 1945. Under Dr. Osborn's guidance, Connecticut was among the first states to require premarital and prenatal blood tests, a state toxicological laboratory was organized, and a state facility for studying virus-created diseases and a poison information center was formed and staffed." Congratulations to our Stan for this honor, a richly deserved reward for his years of devoted service.

Mary Plummer Rice:—"I mustn't let the wonderful memorable month end be-

fore sending my deepest gratitude to you for the superb reunion—I had thought—'The Class Supreme' was just a clever phrase—but it is just that—Supreme! I loved every minute—I must confess I dreaded it a bit, especially since **Ralph Curtis** and **Sidney Dodd** weren't to be there. What I would have missed if I had backed down! Thanks, too, for making me so welcome—I know I caused you much extra trouble in your hectic months. But aren't you convinced nothing could have turned out better? The Radcliffe 50th was very different—but oh so rewarding, and I'm glad I was persuaded to attend there, too. It made me aware how foolish I have been not to participate in the Radcliffe Club in San Francisco. I'll try to do better." It was certainly all our pleasure, Mary, to have you with us and we appreciate the effort you made to do it. . . . **Al Sampson:**—"A job well done. I am sure everyone there will always remember the good time we had, and it is most pleasing that all returned safely after it was all over. This to a great degree was due to your having things so well arranged and well ordered. Everyone had plenty to do and it was done with comfort and no pressing. That takes time and good planning but it pays off." This is extremely modest and unassuming on Al's part for he did a magnificent job on our Committee. . . . **Bur Swain** writes an excellent testimonial:—"Fran may peek. I have to thank you, and your hard working associates on the grand reunion you staged. It was great. All your hard work, to the finest detail, certainly paid off in the enthusiastic crowd you turned out. I think everyone who was there was well rewarded for attending, because of the attention to details paid by the committee workers. Every little thing was so well done. It is my private opinion that Ben did a great deal of very intensive thinking and writing to have obtained the result he did. The largest aid he had was time, given him, by our powers that be. The class did well for itself in memorializing his great work with the bowl publicly presented. The 'Great Gift' presented at the beach is an object to be preserved. There is a decision I must make, to keep it intact, (yes) or spoil the closure. Thanks." . . . **Joe Snyder**, Treasurer of M.I.T. who worked closely with Ben:—"Ben Neal was certainly a driving force in the success of your contribution to the Institute achieved under his most effective direction. It was a terrific experience to work with Ben in the fine job he carried there for the Class and M.I.T." . . .

Speed Swift:—"Some party! Have you recovered, as yet? I have two questions. Not until I got home (and sobered up) did I discover that I had someone else's raincoat in place of my own. Where I did the switch, I am not certain, but I suspect it was after the Cocktail Party at the Faculty Club. If someone tells you the same story, better put him in touch with me, for an exchange. Regards to Fran and you." I sympathize with Speed, for, I too, lost a hat and raincoat (with my name and address in it) at the Alumni Dinner in the Cage. . . . **Charlie Ward to Wally Pike:** "I was glad to hear from you in regard to the 50th Anniversary

Celebration of our Class. I regret that I will not be able to come back for the Reunion. I have not been active in engineering since 1947—due to failing vision. Just recently I am able to go around alone outside of our home. I remember you very well, particularly because of the excellent brand of baseball that you pitched on the day of the Class Outing and when out in Boston I roomed with **Chris Wolfe** and **Eddie Stearns**. As you know perhaps Chris Wolfe has passed on—and I only hear from Stearns with Christmas greetings—since his illness. The M.I.T. Club of Columbus is quite active here as they have several members working for the North American Aviation but I personally have not taken an active part in the Club for some time. About eight or ten years ago I acted as Secretary for the M.I.T. Club of Columbus for three years and at that time they were also quite active. I also acted as Secretary of the M.I.T. Club of Chicago prior to the above time. During that time I was instrumental in sending three Chicago residents to M.I.T.—one took Civil—one Building Construction and the third Mechanical Engineering. I remember a number of the fellows in our Class and I hope a goodly number of them will be coming back and a good time will be had by all." . . . **Bob Welles**:—"It was very nice and thoughtful of you to send me a snapshot of a tableful of us at Coonamessett, also a letter of thanks. The thanks should be going in the other direction. The fact that 1915 is a class with a certain amount of spirit is entirely due to the way that spirit has been nurtured and stimulated by the constant efforts of a remarkable secretary. We owe you a lot more in the way of thanks than we have ever expressed. In fact I was disappointed that it wasn't more forcefully brought out at our reunion. The little gift of cash I thought was a poor substitute for what should have been an ovation from the class. I guess we just didn't know how to express ourselves extemporaneously, and the cash was the result. It was a little hard to know how best to express it without seeming to belittle the efforts of some of the other class officers. Some of them did a good job too, an excellent job, but it was work done over a comparatively short period of time. And their work was undoubtedly made easier by the continuing efforts of our secretary through the years to keep us all in touch. There is considerable interest around here right now in the Mars business, Ranger IV being primarily a Pasadena product. We'll all be looking for news of its accomplishments during the next few days. Who was it that started this report that M.I.T. would be better off with 1915 dead than alive? Probably true, but I wish they wouldn't holler it so loud."

Gardiner Wilson:—"At the Cape, Gardiner thought he had to hurry home for some acute surgery. We are relieved to know from his letter that it was not necessary and that he is doing all right. Keep it up! "On arriving home, it had apparently healed inside and I shall put off a hospital visit at least for the time being unless it reoccurs. The surgeon says it should be investigated so I am

wishful thinking at the moment. It was a swell Reunion—thanks to the hard work you and your committee put out to make it such a wonderful success. I regret missing the cocktail party but you understand my decision to be a bit discreet under the circumstances." . . . **Pop Wood**, with his good natured "leg pulling," "Boy did those Reunion pictures come out great! Just received mine and what a grand job George did identifying all the gang. The only guy I didn't recognize is the one between Louis Young and Ben Neal. All good looking fellows and clean minded. You know, I am still vibrating with excitement and fun that we had. A great bunch of guys if ever there was one. Is Fran still interested in her husband, so called. Anyway give her my best and Charlotte joins me in all the sentiments expressed." Pop generously supplied the brightly printed bags to carry home the Reunion Souvenir. . . . **Louis Zepfle**:—"Congratulations on a fine job. No complaints." . . . **Barbara Thomas**:—"As 'Assistant Hostess' for the cocktail parties—a misnomer, of course, as **Al Sampson** did absolutely everything in his kindly, efficient way—I just want to say that the associations Virginia and I have had these many years with the Class Supreme have afforded us great pleasure and comfort. My only hope is that we will all meet again soon and that you all will enjoy good health in the years ahead. My love and best wishes to you all!" . . . **Dick Feingold**, 1943 Class Secretary, who was our guest with the 1943 Class President, Jim Hoey, at our Cocktail Party:—"Many thanks to you and your 'Class Supreme'-mates for a most enjoyable afternoon at the Faculty Club. The gift which Al Sampson gave me, with the letter inside, is a unique item, and most appreciated. We look forward to your meeting with our gang in the fall, for some advice and inspiration for our own class." It's flattering to have this younger class turn to us for help and inspiration and we are sure we can successfully indoctrinate them to become another Class Supreme. There will probably be more reunion news for you in next month's column. . . . **Ralph T. Jope**, 1928, Business Manager of the Technology Review passed away suddenly in New York on July 13. His loss is a sad blow to M.I.T. and to our Class, with whom he had always had a close and friendly contact. A fine M.I.T. man. Our class sent a memorial contribution to his church and wrote to Mrs. Jope and her family. We'll greatly miss him.—**Azel W. Mack**, Class Secretary, 100 Memorial Drive, Cambridge, Mass. 02142.

'16

Things are shaping up fast for the BIG one, the 50th Reunion, that comes next June. Steve Brophy, our reunion chairman, in fact our reunion chairman for every five-year event since 1916, has already had his machine working overtime at times. The new 50th stationery designed in cardinal and grey by **Izzy**

Richmond shows pencil sketches not only of the good old 1866-1916 Rogers building on Boylston Street but also of the whole modern M.I.T.-on-the-Charles of today. From the letterhead we see that Steve has five regional chairmen: **Jim Evans** for the East Coast including Connecticut, **Ralph Fletcher** for New England above Connecticut, **Cy Guething** for the middle West, **Vert Young** for the South, and **Irv McDaniel** for the great Southwest and West. Further, on the Committee, are **Joe Barker** as Reunion gift chairman; **Mary Barker**, women's activities; **Len Best**, publications; **Peb Stone** and **Harold Dodge**, Reunion Directory, **Izzy Richmond**, transportation; **Jim Evans** and **Irv McDaniel**, entertainment; and **Bob O'Brien**, our long-term honorary member, reunion committee secretary. The program will be an impressive one—Friday through Monday June 10-13. As Steve Brophy says: "We'll commemorate in Cambridge and celebrate on the Cape." For the graduation exercises on Friday, we will wear cap and gown in the academic parade, will be seated as a Class on the platform, will occupy places of honor at a luncheon given by Dr. Killian, Chairman of the Corporation, and will hear a '16er address the assembly. Then to the Oyster Harbors Club in Osterville on Cape Cod for our 50th Reunion celebration, scheduled to be the best ever. We return to Cambridge for a Sunday evening cocktail party given for us alone in the walled garden of the President's house, with President and Mrs. Stratton as hosts. And on Monday morning we will join 1300 other alumni for Alumni Day. Again we are the honored guests of the Institute at the luncheon when our President, Ralph Fletcher, and Vice President, Joe Barker, will grace the speaker's table and present to the Institute the 50-year gift of our class. It surely is something to look forward to.

Now, back to ordinary things. Do you think your home taxes are high? Do you pay just over 4% of actual value as some of us do in New Jersey? We do, however, have a champion, a good one, in our fair state, '16's own **Len Best**, and is he telling the story straight, by radio and the written word! Here's an extract from an October bulletin, "The Worker and the Sales Tax, remarks on the need for Tax Reform in New Jersey by Leonard E. Best, Chairman, Citizens Action Committee for a Sales Tax." Here's a sample of what Len writes: "Take the worker, for example whose wife decides to get a job, or who has a second wage earner in the family. A sales tax does not immediately take a large chunk of his wife's wages. They can decide what to do with the money she earns—buy a home, get some more insurance, pay for the education of their children, or a score of other uses not subject to a sales tax. If people are poor and underprivileged, there are many reasons. They may be handicapped; they may lack the proper skills for today's demanding jobs; there may be a dearth of jobs. Or—and let's face it—they may prefer the lazy life to the routine of steady work. They may prefer the welfare check to the pay check. They may need help, but the welfare check is

not the whole answer to the problem. In all fairness, let's not discriminate against the men and women who do work. They are the backbone of our economy and of our country."

Another item. They say if you want a job well done, choose the busy man to do it. Now we don't enumerate all the active jobs that Steve Brophy has besides that of running the 50th Reunion, but we have noticed two items in recent months. He couldn't attend the New York class luncheon in September because of a last minute call to address a luncheon of the USO around the corner. Looking further into this line of activity, we find that Steve will head the Committee celebrating the USO's 25th Anniversary. A bulletin in June stated that the USO National Council Meeting is to be held in March 1966, and that "Thomas D'Arcy Brophy, distinguished advertising man and associated with the USO since its inception in February 1941, will head the Committee celebrating." Then again, we received notice of the October 11 buffet dinner and meeting at the M.I.T. Alumni Center of New York, United Engineering Center, East 47th Street. The announcement reads: "The Speaker: Dr. Hans-Lukas Teuber, Chairman of the Psychology Department, M.I.T.; the topic: Brain and Behavior; the chairman: Thomas D'Arcy Brophy '16 (Former advertising executive who should know something about psychology)." And president Ralph points out a third Brophy item which we'll cover in more detail in a later issue—an article in This Week Magazine of May 2, 1965 (and reproduced in the September Reader's Digest under the title "They Rebuild Broken Faces"). This is the amazing story of the work done by the Society for the Rehabilitation of the Facial Disfigured, of which Steve has been volunteer president since 1956.

Replying to our usual questions, Dina Coleman says: "I haven't been doing anything, haven't been anywhere, not going anywhere and haven't seen anyone. The children are all progressing as usual and I am fresh out of philosophy." Says the only item that may be of interest to the class "is that Transylvania University is now considering adding another college, that of Business Administration, with the idea of working out a reciprocal agreement with one of the South American colleges. This would involve an active study of Spanish and Portuguese." In addition, says Dina: "We would have Business Practices, Automation, and History of the Cultures of these countries. If the plan is adopted, it will mean that we will double the entire plant, which now accommodates 850 students. I think our future lies in South America and not in Europe. At my age, I hesitate taking on this additional responsibility, but we have plenty of young men on the staff who can do it and are eager to try." . . . Late in August, Jap Carr was at it again, busy getting his 8th Annual Buck Hills Tennis Tournament organized. He was expecting to have more than 100 tennis enthusiasts for a three-day tournament the last week in September. He and Hildegarde spent alternate seasons in Buck

Hill Falls and Palm Beach; Palm Beach is the address as of November 1 this year.

In the September issue of American Scientist, published quarterly by the Society of the Sigma Xi, we find Van Bush's interesting "Forward to the American Edition" of the book, Tizard, by Ronald C. Clark. The foreword reads in part: "It is especially fitting that an edition of a book on Henry Tizard should appear in the United States for he exemplified strongly the mutual respect and friendship which developed between scientists and engineers of the United States and their counterparts in the United Kingdom. It was primarily due to the skill, patience, and geniality of Tizard that interchange between Britain and the United States, on the development of weapons, was put into effect and made fully operative, long before the United States entered the war. There is no doubt that this collaboration resulted in a more effective war effort and contributed significantly to ultimate victory."

Ed Weissbach says this has been the year to stay home; they visited many spots in New England including the old engineering camp in East Machias which he has always wanted to see. He says: "I am going to take an extension course at Harvard in German which I find is conducted by an instructor from M.I.T., but that will be for only two hours one day a week. This is in case we can manage a trip to Germany after the 50th Reunion. But somehow the zeal for foreign travel is dying down—there is no bed like your own nor food like that at home." Hear!!

Here is an item of special interest regarding the new Student Center at M.I.T., which was formally dedicated on October 9. The Music Room of the new Student Center is to be named in memory of Mrs. Rita Welch Gruber. The inscription to be placed in the memorial room is: "Rita Welch Gruber Memorial Room, Gift of Rudolph E. Gruber, Class of 1916." Professor Eduardo Catalano of the School of Architecture has the responsibility for handling the plaque or inscription which will designate the room.

. . . Earl Mellen continues busy in Blue Cross and as chairman of the Millburn Short Hills (N.J.) Planning Board, but on July 1 got relieved of the presidency of the Rotary Club of Newark. As Chairman of the Board of the Hospital Service Plan of New Jersey, he has some information that would appear to be of interest to a lot of us old codgers. He writes: "We have had many meetings to determine what the role of the Blue Cross will be under the medicare program for those over 65. Hospital costs continue to increase at the rate of about six percent a year. In fact the increase may be somewhat larger for the year 1965 compared with 1964 when all the figures are in. This applies particularly to the over-65 class, in which all of us are located. The hospitals do more for us, they have more expensive equipment, and each year know a lot more. However, all labor costs are up and will go much higher with unionization of hospital maintenance and other labor classifications. The big question at the moment is whether the Fed-

eral Government will set up a large bureau to process all the claims or if they will set up the Blue Cross or some other group to administer the program."

Maury Holland has been up to something different again. He reports that he and his son have been "field testing" a new "atomic energized golf ball!" It has an irradiated steel center and irradiated rubber twine binding that has "95% compressibility, meaning 30 to 40 yards more." (That's what Peb Stone knows we need on our straight ones.) Maury says: "My son got on a 310-yard green three times in four days in a row when we used 'Maxflit' on alternate holes as control research." (How about that—good old "designed experiment" research!!) Maury wrote from Boston where he was attending the New England Stamp Show, to check on the value of his mint airmail stamp collection from 72 countries started 35 years ago. Included in his collection is one Amelia Earhart Hawaiian flight, and a First Zeppelin Flight around the world with cover signed by Count Eckner.

Seems like a long time since we have heard from Dick Fellows, who lives in Kelseyville, Calif. He has been retired for the past five years and has been doing a little consulting—his letter head says "Consulting Engineer, High Voltage Cables"—but not enough, he remarks, to interfere with his pleasure. "We have a 26-foot Traveleze trailer, and have enjoyed many trips with it while maintaining our home at Clear Lake." They plan a trip back East in '66, will spend some time in Florida, then work their way up to New England, and will be at the 50th in June.

The Henry Shepards spent most of the summer again in their cottage on Mt. Crescent in Randolph, N.H., where they go on hikes, swim, and enjoy "puttering around the grounds." Henry tells of making a new path to the woods this summer about 50 yards long; in the process he had to dig out 37 rocks of various sizes and 28 stumps as well as bringing in loam to fill the holes (not a job, some say, for weak sacroiliacs).

Everett Johnson in Monroe, La., is enjoying retirement, says that he and his wife keep very busy, especially in church work, and is doing the things he couldn't do in his active career because of so much traveling. Of his daughter he writes: "Now that her children are 13 and 10 she has been able to go back to college at Northeast Louisiana State College here in Monroe, and was graduated last May. She's been substitute teaching in the high schools since." Her husband, a contractor, "has finished a one million and a quarter dormitory and is now constructing another at the local college." . . .

Hovey Freeman says he has become a first class loafer now that he is practically fully retired. He writes: "I attend directors meetings—also am President of the Roger Williams General Hospital, which is quite a job in itself, and continue working in my hobby shop at odd moments. Out of about 21 grandchildren and two great-grandchildren, we had 17 of them with us for several weeks this summer, which kept my wife and me very busy, but we enjoyed it fully. Am looking for

ward to our 50th Reunion. I still can't make myself believe that I am that old."

Allen Giles reported in late May that he is still on the job as chief engineer of Longwood Towers in Brookline. He says that since the new owners (1963) of the Towers are function minded, "we have constructed new Function Rooms in the period of King Arthur: Camelot Room, Tudor Hall, Sword and Shield Room, and many others too numerous to mention." He reports that his son, Allen, is still active as the head of a Music Department of a new \$3½ million college in Buffalo, and his daughter, Dorothy, has just completed her degree as Classics Major at Radcliffe and is proceeding on a Woodrow Wilson Scholarship to acquire her Master's and Ph.D. in the same major. Allen plans to be at the reunion in June.

We regret to report the death of Dr. **Morris B. Sanders** in Rockport, Mass., on September 21. He had been living in Rockport since his retirement. Quoting from the Gloucester Daily Times: "He was a graduate of Washburn College in Topeka, Kan., and the Harvard Medical School, and had studied public health at M.I.T. In addition to practicing medicine in Boston and New York he was associated with Yale-in-China, the American Hospital in Paris, and was a health attache for two years in Lebanon and Syria. Dr. Sanders had been actively interested in Rockport community affairs, especially the Sandy Bay Historical Society and Museum, of which he was president for several years."

Frank Holmes writes that he has been in the food business in the Faneuil Hall district for the past 50 years and is still selling to M.I.T. He has no desire to retire but is taking more and more time off. His chief hobby is traveling by ship—has had "wonderful trips to Alaska, North Cape, Rio and Buenos Aires, South Africa, New Zealand and Australia, Bali, the Orient, etc." This last winter he and Mrs. Holmes "had a marvelous cruise around the world on the President Monroe, from December 26 to April 16." And finally: "God willing, will be at the 50th Reunion." . . . And speaking of reunions, **Elsa (Habicht) Mueser** writes: "Looking forward to our 50th Reunion, to the sight of familiar faces, to the listening to great and small triumphs, to a healthy happy class." . . . And **Hank Smith** says: "Sorry was unable to make the 49th but come hell or high water, Dot and I will get to the reunion and Cambridge in June." Then: "Since early July, this has been, paraphrasing Shakespeare, the summer of my discontent, for I was visited by an attack of the shingles and only now are they at the vanishing point. So it has been a relatively dull season, and fortunately we did not have any very specific plans that had to be cancelled. Don't ever get 'em!!" Hank said their trip to Florida in late March proved to be rather disappointing and was cut short because of the unusually hot and muggy weather.

With **Joe Barker** and **Rudi Gruber** your secretary attended the Annual Alumni Officers Conference in Cambridge September 9-11 as guests of the Institute and thoroughly enjoyed the total program. The dinner Friday evening, the very first

affair in the just-opened new Student Center, and the luncheon on Saturday with Van Bush's clear-cut message, were outstanding events. It was a special pleasure for the Secretary of '16 to talk with Chet Dawes, the Secretary of '09, for we together ran the T.E.M. Lab (Technical Electrical Measurements Lab) right under the big dome on the first floor in the first year of the new buildings in Cambridge, 1916-1917. We can report most favorably on the choice of McCormick Hall, the girls dormitory, as the 1916 living quarters on Thursday and Sunday nights for the 50th reunion next June.

When in New York, remember that the monthly Class luncheons are held at the Chemists' Club, 52 East 41 Street, at noon on the Thursday following the first Monday of each month. Those at the October luncheon included Joe Barker, Steve Brophy, Art Caldwell, Harold Dodge, Jim Evans, Francis Stern, and Peb Stone.

Again we close the column with a word of appreciation to the many who answer calls for lines or paragraphs, news or notes, opinions or philosophy. It's not long now; the 50th is only months away, so help keep the column full and interesting by writing a little but writing often to any of the following—**Harold F. Dodge**, Secretary, 96 Briarcliff Rd., Mountain Lakes, N.J.; **Ralph A. Fletcher**, President, Box 71, West Chelmsford, Mass.; **Joseph W. Barker**, Vice President, 45 Beechmont Dr., New Rochelle, N.Y.; **Hovey T. Freeman**, Treasurer, 45 Hazard Ave., Providence, R.I.; **T. D'Arcy Brophy**, Reunion Chairman, 470 Park Ave., New York, N.Y. 10022.

'17

As these notes are being written our 48th Reunion is a matter of history. Be sure to read the January notes for a full coverage. **Jim Flaherty**, in acknowledging his intention to attend the Reunion, sent the following news item: "**Nelson Chase**, who is enjoying his continuing retirement by batting out two 5' x 10' murals for his local Belmont Library. These show Belmont, Mass., in the Horse and Buggy era. Look at the pictures, borrow a book, and shake hands with the artist." . . . The illustrious traveller of the class of '16, sends via the Hon. Secretary, Harold F. Dodge, word that **Herb Williamson** and his wife are deceased and his only son is in a Veterans Hospital near Rochester, N.Y. . . . **Joe Littlefield** is still directing the Financial Executives Research Foundation in New York City. In the Financial Executive Journal for September he published an executive study on Developments in Financial Organizations, 1915-1965. . . . Communication as of October from our **Ray Stevens** reads as follows: "We stopped to see Betty and **Phil Hulburd** at their home in Meriden, N.H. It is Betty's Grandmother's old home, where they used to go summers from Exeter. Phil designed some changes and an addition so that it is now comfortable and fitted to their family needs, and still as attractive as it has always been. Their

daughter Lucy and her husband live on a farm in Essex, Mass., with their two children. Son Bob has recently been put in charge of college placement at Andover. He will continue as head coach of lacrosse and carry on with one class in German. He has three children." Your Assistant Secretary would appreciate more letters of this sort so that we can all share in the news. . . . Lt. Gen. **Leslie R. Groves**, U.S.A. Ret., was one of several to be quoted in the August 1 New York Times Magazine on the occasion of the 20th anniversary of the initial atomic bomb explosion; for those who did not see the statement, it seems fitting to repeat it here: "There was never any question as to the use of the Bomb, if it was successfully developed, on the part of anyone who was in a top position on the project, and who knew what was going on. One group that objected to the use of the Bomb did not object until after VE Day. That group was mostly centered around people who were bitterly anti-German and did not appear to feel the same way towards Japan.

"As to my position, it was to bring the War to an end sooner than it would otherwise be ended, and thus to save American lives. We were losing about 250 men a day in the Pacific. The estimated American casualties for landing on Japanese shores were anything between 250,000 and 1,000,000, while the Japanese casualties were conservatively estimated to run as high as 10 million. We were therefore faced with a very serious question; should we go on with the War and face the American soldiers, who were subjected to unnecessary danger and the families of all those who were killed after we could have stopped the War? The reason that we did not have a demonstration of the Bomb was first that it would have completely wiped out the element of surprise, which in my opinion was extremely important. As it turned out, that was one of the reasons Japan surrendered so quickly. They weren't prepared for it. It was a bolt out of Heaven. There has never been a surprise to equal it since the Trojan Horse.

"Also, if we had had a demonstration or warning, and if neither had any effect—and I don't believe they would have—then the Japanese would have made every effort to see that the plane that carried the Bomb was brought down, and it would have increased the hazard of the men who were carrying the Bomb many-fold. Above all else was the very strong feeling on the part of President Truman, which was the same feeling that the rest of us who knew about it had, that it was criminal and morally wrong for us to have means to bring this War to a proper conclusion and then not use the means.

"It is true we didn't need the bomb to win, but we needed it to save American lives. Remember this, that when the Bomb was used, before it was used, and at the time it was used, we had no basic concept of the damage it would do. We thought it would do a great deal, but we did not know at that time whether the explosion might not be a little too high or a little too low. We did not know whether the fusing would work. The bomb used

over Hiroshima had never been tested. A lot of features had been tested, but only of the gun-part. It was a gun-type bomb in which a projectile of uranium 235 was fired into a uranium 235 target. We had no real knowledge that the thing would work. The fact that the bomb had exploded at Alamogordo—the implosion type, the kind used over Nagasaki—was no indication that the Hiroshima type would go off.

"Also, the one tested in New Mexico was put up on a tower. It had none of the mechanisms that were necessary to set it off at the proper height. The actual proximity fusing for control of the height at which it would be exploded was tested in the United States about 48 hours before it was actually used over Nagasaki. It was tested over the Tinian area 24 hours ahead of time. And nobody could tell just what was going to happen, and particularly we couldn't tell how severe the explosion would be and how many people would be injured.

"We also had no concept that the Japanese reaction to such a disaster would be as calm locally, and without anybody coming to assist, as we would have done. The decisions recommending the use of the bomb, made by the Interim Committee formed by President Truman, were reached after thorough exploration of every possible angle: Could you have a demonstration? What would that mean? How and where would you have a demonstration? What would be its effects? We had not at that time seen the explosion at Alamogordo, but I can just say that had I been a Japanese observer and had seen the Bomb go off at Alamogordo, I would not have advised surrender. It is one thing to see something go off, causing no damage at all but creating a great ball of fire, and obviously of tremendous power, but it's another thing to say: Well, now, they set this off on a tower; maybe it weighs 50 tons, how do they know they can deliver it? That they can get all the mechanisms perfected to deliver it? And I am sure anyone who is a sound thinker would have said: 'No, that doesn't convince us. In the first place, would they have another?' For example, the German scientists believed it would be impossible for us to make an atomic bomb, and that if we did we could make only one. The Germans thought of an atomic bomb as something that would have to contain as much as 20 tons of uranium 235, a practically impossible quantity."

A most interesting travelogue was received from **Dick Loengard**, who left in the middle of May with his wife and returned the middle of July. We are quoting herewith that part up to June 18 and trust that a concluding chapter will be forthcoming: "Paris was delightful—expensive yes, but we failed to note any lack of stability—in fact everyone seemed happy, and no indication of anti-American feeling, even though we walked past the Elysée Palace twice a day, and during the last two days De Gaulle was in residence. We then took one of the excellent new all electric French trains to Milan, and it worked out just the way we expected—attractive country side in France, 100 miles per hour speed, extraordinary

road bed, and then, when you get to Switzerland, a rather exciting two hours up the Rhone Valley, until the train pops into the Simplon at Brig, and you gaze on the Borromean Islands at Stresa on Lake Maggiore only a few minutes later. At this season all is possible in the daylight hours of one afternoon. We picked up a Fiat #1500 L in Milan—the "L" making the #1500 barely possible for anyone with legs longer than Toulouse-Lautrec to drive, and after using it for a few short drives out of the city, set off for Turin, a city of which we had heard little, but with which we fell in love in our short overnight stay, and then started out on the main reason for coming to this part of Italy, to spend a week or 10 days in the Val D'Oasta, which exceeded our expectations in its beauty and scope. It is, as you doubtless know, the valley running parallel to that of the Rhone on the south side of the Matterhorn, and Monterosa, with side valleys about 30 kilometers long, running towards these mountains. We were reasonably lucky; early cloud formations lifted just as we approached the heads of the valleys at around 4,000 to 6,000 feet elevation, and we had some beautiful views. Aosta, Courmayeur, and St. Vincent, which we made our base, are attractive towns, particularly Aosta with its Roman structures intermingled with modern architecture. We then spent one freezing cold night at Bellagio on Lake of Como, where the sun finally came out in time to prevent any attack of bronchitis from developing completely into pneumonia. Back to Milan where we met friends, side trips to Bergamo and Verona, then by train to Copenhagen where we now are. Weather on the whole still short of sun. Best regards to you and the Sixteeners and Seventeeners if you are still having lunches." (The regular monthly lunches at the Chemist Club in New York City were omitted for July and August, but resumed in September).

Then followed a short letter from **Pete Newell** from Goose Rocks Beach, Maine:—"I appreciated receiving your Bon Voyage card when I left on the SS France last April, and telling me to watch out for a good looking guy in a Citroen. So I was quite surprised, on our overnight trip by train from Florence, Italy, to Amsterdam, after we had seated ourselves in the diner that evening, to see across the aisle **Dick Loengard** and his wife on their way to Copenhagen. We sailed from Rotterdam on the Nieuw Amsterdam after a very enjoyable two months tour of Europe (Let's have a little travelogue, so that we stay-at-homes can enjoy it too.). I watched the Conducenta and his assistant at the controls at the rear end of a train between Milan and Rome at 132 km or about 82 miles per hour, a very smooth train ride with continuous curves; by comparison it was nearly impossible to drink a cup of coffee on one of the faster trains between New York and Boston. We have been in Maine for the summer, but will return home to Florida by the end of September." The '16-'17 Luncheon resumed in September as usual on the Thursday of the first full week of the month, only at this time the Sixteeners

went private on us, being primed for their 50th Reunion. Attending were **Ken Richmond**, **Bill Hunter**, **Dick Loengard**, **Ray Brooks**, and **Dix Proctor**. Ken Richmond advised that he had 17 grandchildren with the latest of the fourth generation, two and one-half years old, living with them, and he remarked that they had never been without children in the house, which may explain why Ken looks so youthful. Then Dick Loengard advised of one grandchild. Now to the other end of the spectrum or rainbow, figuratively speaking, the assistant Secretary claims only six cats and two dogs.

Immediately after the luncheon two Sixteeners and two Seventeeners headed for the Sixth Annual Alumni Conference at Cambridge, three by air and one by train! This conference was attended by some 450 odd alumni, and '17 representation was the largest of any up to '17: Just Basch, Ray Brooks, Bill Dennen, Stan Dunning, Al Lunn, Dean Parker, Ray Stevens, Dix Proctor. The three day session was most enlightening and brought out the importance of M.I.T. in the educational field and the cost of maintaining it in the #1 position. The Conference was the first to have dinner in the new Student Center, in fact workmen were busy all around while we were being served an excellent dinner in the Puerto Rican room. The Conference ended with a most interesting address by the Honorary Chairman of the Corporation, Dr. Vannevar Bush, '16. Here are a few statistics in closing: for the year 1965-66, 3600 graduate students, 3700 undergraduate, 12,000 total on the campus, 75 nations represented in the student body, 20% of post-graduates are from abroad, 25% of students married, of which 46% are post-graduates. **Al Lunn** asked for the privilege of including another statistic at the end of this column. The 1917 Class treasury is low. It should be built up substantially before our 50th reunion. Let's start now by sending contributions to **Lucius T. Hill**, Treasurer, 19 Congress St., Boston, Mass.—**W. I. McNeill**, Secretary, 107 Wood Pond Road, West Hartford, Conn. 06107; **C. D. Proctor**, Assistant Secretary, Box 336, Lincoln Park, N.J. 07035.

'18

The creeping tendrils of one man's good deeds reach out to infuse for someone the experience of each new day with freshness. **Henry M. Blank** of Short Hills N.J., retired some years ago; since then he has worked with the Newark United Fund, thus enlarging in a pretty anonymous way the good that will live after him. . . . From far across the Atlantic in a place called Brenner's Park Hotel, Baden-Baden, "im Schwarzwald," **Herb Larner** took time to write a word of appreciation for the moments, quivering with fulfillment, which we all enjoyed together at our interim reunion last June. . . . **Pete Harrall**, the ever buoyant, reached out from across the opposite ocean, upon which he was headed for

Hawaii with the girl who was to him as spontaneously attractive as a wild flower. He, too, says, "Thank all those who contributed to the planning and carrying out of such a memorable two days." Then, with banter still evident on the ink, he adds, "You're quite a gal, Carolyn, and a low bow to your lord and master." . . . Tom Kelly was unable to be with us due to the tendrils of a loving heart which clung in the direction of duty. He writes: "Fred Washburn should win the grandchildren sweepstakes hands down since he had a larger base to work from. However, I do have seventeen very wonderful young people who call me Grandpa. Alan Howard had twenty-one, I believe. I am still in the mundane occupation of earning a living. The Lilly Chemical Products, Inc., which I founded, is still solvent. I must admit though that Tom Jr., class of '51 and Harvard Business, is the real operating head. However, he thinks my contributions to the company are still of some value. Anyhow, I haven't any thought of retiring." . . . Albert Sawyer missed and was missed at the Cape. "We were in North Carolina at Roaring Gap last summer and almost had a M.I.T. reunion there. Elbert Bancker of our class was there. He had recently returned from a South American trip and showed slides of the high points. Also met Noah Gokey of '17 and Admiral Rawlings of '21. Life goes on about the same here. We had several old friends visit us this winter which always makes it interesting. Today's doings typical: sweeping leaves off the roof, raking, trimming shrubs, spraying roses for bugs, etc."

Johnny Markham continues in his quiet, effective way to influence others generously, even to the point of noticing a classmate replenishing his gas tank on the way home from a day's work in a Connecticut factory. "I was delighted to hear from you and flattered to learn that the brethren of '18 had not forgotten me and were even interested to see me again. I promise, that come three years from now, if I can put one foot ahead of the other I will attend the 50th. This stationery indicates I'm in business. When I retired from M.I.T. some of my associates in the Supersonic Laboratory persuaded me to start a company. We are a scientifically oriented space organization, doing some good work, but not startling our stockholders with dividends. I'm having fun and will keep it up as long as I'm useful. A few weeks ago I was driving on the parkway at Meriden, Conn. I was stopped momentarily by a traffic light, near a filling station—I was sure that I saw you standing by your car which was being fueled, but before I could attract your attention the traffic started and I was forced to go on. Was this you? I'm delighted to know that you are enjoying yourself and pursuing your work with the enthusiasm and vigor you always applied to your tasks. I cannot imagine you ever being retired and concerned with petunias and radishes as long as you are still able to contribute to the happiness and well-being of other people."

On October 7 Sax and Louise Fletcher sailed for Japan, reaching further westward than they had ever been before. By

the time these notes are embalmed in printer's ink, they should have returned with something to report in this column. . . . As head of the U.S. Arms Control and Disarmament Agency, Bill Foster has returned from a summer in Geneva where a 17-nation disarmament conference crept in its petty pace toward man's need not only to understand but to love.

The creeping tendrils of one man's good deeds reach out to the lives of each one of us. I am reminded of this every day when seated at my desk. In front of me is as beautiful a piece of polished petrified wood as anyone ever admired. When we came across the continent after some duties in California three years ago, I obtained a rough specimen. Ed Rossman, class lapidary, offered to polish it for me. In the process it shattered, leaving, however, a respectable piece which he polished and delivered. But because it was now only half size, Ed took a much more beautiful piece from his own precious horde. It is now also in front of me as a daily reminder that the archangel in charge of recording good deeds is a busy individual on account of my classmates.

Joe Pearson died last August 1. He was associated with Jackson-Moreland, Inc. of Boston, a member of the American Society of Mechanical Engineers, Engineers' Blue Room Club of Boston, and Calvary Baptist Church where he served as moderator and was a former chairman of the Board of Directors. He was survived by a wife and two daughters. A month before he died Joe also gave me reason to ponder the outreach of a man's thoughtfulness even though the deed took but a few moments. "For several years," he wrote me, "I have been receiving each month from Barclay Chemical Company a daily reminder notebook. At the top of each page is a quotation by some famous man. I have just received the book for the month of July and in looking through it I find, among others, quotations by Mark Twain, Victor Hugo, Confucius, Ralph Waldo Emerson, and F. Alexander Magoun. I am very proud to show this to my engineering colleagues and point out that we are classmates and old friends." I had no idea whatever what he was referring to. My letter asking him what the quote was, never had a chance for an answer. But for me he started a whole day with a song, and again a reminder that I should look to the creeping tendrils of a good deed or a kind word of my own.—F. Alexander Magoun, Secretary, Jaffrey, N.H.

in July of this year. He was a retired architect, and had been associated with John P. Thomas for several years. . . . Hosmer C. Jones has moved from West Hartford. His new address is 60 Nehantic Trail, Old Saybrook, Conn. 06475.

Our notes have been rather scanty of late, so your Secretary has decided to send out return mail postcards, requesting that you write about yourselves and classmates, so we can get on the tracks once more.—Eugene R. Smoley, Secretary, 30 School Lane, Scarsdale, N.Y.

'20

Fifty classmates and 32 wives made our 45th at Red Lion Inn one of the best, if not the best Reunion our class has held. Much of the credit goes to chairman Frank Bradley and his hand-picked committee. Ike Wilson worked like a beaver to keep every moment lively and entertaining. His picture show, including views of every classmate present as he looked in 1920, was the highlight of the reunion. Buzz Burroughs got the golfers out and hacking, and saw to it that they had perfect weather and a beautiful course. I have mislaid my notes on who won the golf prizes but recollect that Buzz himself came in with low gross and Norrie Abbott was a prize winner, too. Check me for errors or omissions, Buzz.

Henry Hills collected and distributed the prizes for golf, bridge, etc., and his selections were appreciated by all recipients. Bruce Buckland, husband of our Flossie, won the top bridge prize and Amy Bugbee the runner-up prize. Ned Van Deusen copped the prize for coming the longest distance—from Julian, California. No less than 26 classmates attended Alumni Day at the Institute and, again, the occasion was greatly enhanced by the presence of the ladies, some 15 of them being on hand. Other reunion highlights: 100 per cent co-ed attendance, Flossie and Dorothea adding much to the party; the joyful welcoming of several who had not been able to make recent reunions, including L. D. Wilson, Phil Young and Larry Burnham; Chuck Reed's superb three-dimensional color pictures of his travels; the gab fests on the front porch; the cocktail parties and the scrumptious meals at Red Lion; the beautifully conducted sightseeing tour of Stockbridge and the surrounding area, and the brilliant sunshine!

Two of our beloved classmates who had planned to attend the reunion were prevented from doing so by untimely death. Elliot Perkins wrote me from the hospital just prior to his passing, expressing regret at not being able to make it and asking to be remembered especially to him many friends including Henry Hills, Foster Doane and Jimmy Moir. A touching tribute to the Class was a contribution from Elliot, sent by Mrs. Perkins, of \$450—a first and valued start on our 50 year class gift to the Alumni Fund. A rising vote of appreciation and sympathy to Mrs. Perkins was made at

'19

Your Secretary and Paul Sheeline attended the Alumni Officers' Conference in Cambridge September 10-13, 1965, and had a chance to catch up a little on what changes are taking place at M.I.T. Your Secretary and his wife stayed on for the M.I.T. Alumni Seminar September 11-13, 1965, which we found most stimulating and enjoyable.

We have been informed of the death of Donald H. Lovejoy of Portland, Maine,

the reunion banquet.

Francis L. Mead had received our first reunion mailing a year ago and had phoned his daughter in the middle of the night from the hospital to make a reservation for him. Frank died on November 20, 1964. He lived in Rockville Center, N.Y., and is survived by his widow, two daughters, three sons and fifteen grandchildren. He was a chemical engineer and executive with Charles Pfizer and Company in New York; he retired in 1953. We are saddened to learn that this distinguished and beloved classmate has departed from our ranks.

Some of our expected reunioners had valid reasons for inability to attend. **Pete Ash** was off on his honeymoon! All of us were happy to hear that his health, which had long been unsatisfactory, permitted a second marriage. We wish him much happiness and many years of it. Pete vows he'll be with us for the big one in 1970. . . . **Bill Freeman** wrote that his plantation in Poplarville, Miss., was keeping him too busy to get away for the reunion. . . . **Don Dowling** and Mrs. Dowling had to cancel at the last moment because of their son. He was trapped in a cave in Niff's Canyon, Utah, and rescued in the nick of time. . . . **Harold Bibber** wrote from Kyoto, Japan, to explain that he was lecturing at several Japanese universities, having retired after 25 years at Union College. He and Mrs. Bibber have been enjoying their trip to Japan and he is presently conducting a series of lectures in Tokyo. Harold promises to attend the 50th.

Further light on our first experience with a husband-and-wife reunion was furnished by a classmate who asked not to be quoted directly. He says he happened to overhear a telephone conversation, prior to reunion, that went like this: "What do you know? I am invited to my husband's reunion this weekend. Do you know it has taken those insipid morons 45 years to get around to inviting their wives!" However, he happily reports, there was complete and unanimous approval on the proceedings, after reunion. "Glowing reports have been made to her friends as to weather, food, the society at large and the party on Saturday night."

Now, with the great 50th headed up by the able and popular **Ed Ryer** as Chairman, we can look forward to an even grander time than we all—husbands and wives—had at the 45th.

Your Secretary and his Amy are just returned from a junket to Hawaii and California accompanied by Ken and Mrs. Sutherland, he of the class of '22.

Witold Kosicki wrote to explain why he didn't make the reunion. His granddaughter was being married in Detroit; before that he was visiting his son in South Carolina and another son, a doctor, was in Ogunquit to visit Witold, coming up from Santa Fe, N.M. Witold made a return visit there last month. He gets around. More power to him! . . . **Herb Bates** had planned to be with us in Stockbridge, but he and Mrs. Bates couldn't make it at the last minute. Herb is still in Brockton, Mass., where he manufactures shoe trimmings, aided by his son. He is also vice-president of the Security Fed-

eral Savings and Loan Association of Brockton. Herb promises to attend the 50th. . . . **"Skeetz" Brown**, who attended the Reunion with his wife, Margaret, told me that they were at the wedding of **L. D. Wilson**'s son, Richard, at New Rochelle last Spring, and that **M. B. Littlefield** and Mrs. Littlefield were there, too. Skeetz mentioned that the Littlefield schooner, "Blackfish," had been making history at the Larchmont Yacht Club for the past thirty years and that it had contributed much to the health, happiness and unchanging youthfulness of the Littlefields. . . . **Harry and Hannah Kahn**, who attended the reunion, are now in Iran, he, as a member of the International Executive Service Corps to act as a consultant for a tile plant in Teheran. Although supposedly retired last year, Harry's well-deserved reputation as a ceramic expert has kept him hopping as a consultant on jobs in California, Texas, Florida, New Jersey and points between. He also found time last winter to go skating and coasting with his grandchildren. . . . Gleaned from **George and Louise Des Marais**, at reunion, was the fact that they have six grandchildren. Their son, Richard, is connected with the dining facilities at Harvard Graduate School of Business. Their daughter lives in Barberton, Ohio, where her husband is an engineer with Babcock and Wilcox. George has served with distinction for 20 years as Honorary Secretary of the M.I.T. Educational Council. He has also been a pillar of strength in the New Jersey M.I.T. Club. George is a member of the distinguished firm of patent attorneys, Keith, Johnston, Isner, and Des Marais, Chanin Building, New York City. . . . **Dave Kaplan** couldn't attend the reunion because he was in Europe at the time. He's another one who intends to be present at the 50th.

Jim Blodgett, who lives at 2873 Bexley Park Rd., Columbus, Ohio, has retired, and he and Mrs. Blodgett are doing a lot of traveling. They recently completed a trip around the world, covering the stretch from South Africa to Boston by freighter. Says Jim, "This is the way to travel!"

Archie Cochran is another retiree who has been anything but idle since he relinquished the chairmanship of the Board of Directors of Anaconda Aluminum Company, one of the world's largest producers of aluminum foil. He remains a Director of the company and of its parent firm, Anaconda Company. Archie, whose interest in Louisville, Ky., is deep-rooted (his ancestors having settled in Louisville in the early 1800's), is hard at work on a huge waterfront redevelopment project. He has done much for his home city, among other things founding Louisville Trees, Inc., responsible for planting some 400,000 trees in and around the city. He has been president of Isaac W. Bernheim Foundation, head of the YMCA, Louisville Chamber of Commerce and Louisville River Area Foundation. He is a member of the Louisville and Jefferson County Republican Executive Committee. He and Mrs. Cochran live on Stone Bridge Road and they have two married daughters.

Dr. **Henry H. Blau** of Columbus, Ohio,

has been named recipient of the Albert Victor Bleininger Memorial Medal and Scroll for distinguished achievement in the field of ceramics. He is widely known and respected for his glass technology work, being largely responsible for the development of glass structural blocks and refractories.

After many years with Swenson Evaporation Company in New York, **Hank Caldwell** has retired and is living in Sarasota, Fla., 629 Rountree Drive. . . . **Ray Reese**'s address is 300 Sandusky Street, Toledo, Ohio. . . . **"Bat"** and Irene Thresher are now settled at 100 Memorial Drive, adjacent to the Institute. **"Buzz"** and Pat Burroughs are now settled at Chipmunk Farm, Topsfield, Mass. . . . **Charlie Klingler** alternates between Phoenix, Arizona, and Milwaukee. . . . **Myer Saxe** has moved from Kennebunk, Maine, to Chestnut Hill, Mass., 31 Hammond Street. . . . **Edward Stark** is in New York City, 333 E. 30th St. . . . **Julius Wolozin** is at 10 Lowell St., Malden, Mass. . . . Professor **Edward S. C. Smith** is at State College, Pennsylvania. He was formerly in Schenectady. . . . **Andy Johnson** is with the Manufacturers Mutual Fire Insurance Company, Providence, coming back from London, England. . . . **Jimmy Harrop** is in Baytown, Texas. . . . **Ben Hopkins** may be found at 426 Melrose Avenue, Toledo, Ohio.

It was learned recently that our old friend and classmate, **Harold Seavey**, had passed away some two years ago. He had made his home in South Braintree, Mass. . . . **Norman Cate** died not long ago. He was living in Arcadia, Calif. . . . Dr. **Alexander Nikitin**, director of agricultural research for the Tennessee Corporation, College Park, Ga., died earlier this year.

I have received more information about the career of **David P. Brown**, whose death was reported in a previous issue. He probably knew more about ships of all kinds than any other man in the world. For many years he boarded all kinds of ships entering the Port of New York, studied and classified them for the American Bureau of Shipping. He was made president of the bureau in 1957 and chairman in 1963. He was credited by the shipping industry with contributing greatly to improved standards of naval architecture and marine engineering.

Thoughtful word has just been received from Dorothea Brownell Rathbone relative to the excellent work being done for the Rhode Island League of Historical Societies by its distinguished president, **Norris Greenleaf Abbott, Jr.** Among other worthy projects for which Norrie is largely responsible is restoration of the John Brown House, headquarters museum of the Rhode Island Historical Society. . . . Incidentally, our other beloved and admired co-ed, **Flossie Fogler Buckland**, turned out some mighty fine color prints of reunion classmates on her new Polaroid camera, as those to whom she sent copies will testify. Your Secretary particularly cherishes the one of Dorothea and Flossie engaged in deep conversation at the Red Lion dining table—taken, we presume, by husband Bruce. Thanks so much, Flossie!—**Harold Bugbee**, 21 Everell Road, Winchester, Mass. 01890.

The several letters you have received this fall from various officers of the Class of '21 are some indication of the amount of effort for your enjoyment that is being devoted behind the scenes in this year that ends with our 45th Reunion next June, immediately preceding Alumni Day. Class President **Ray St. Laurent** reported to you in September on important Class affairs and reminded you to attend our two big consecutive anniversary celebrations in Groton, Conn., and in Cambridge. Last October, Class Agents **Ed Farrand** and **Chick Dubé** sent you their special jubilee year message and again told you of those festive gatherings, come June. Now you have the complete story in the November mailing from Reunion Chairman **Mel Jenney**, with descriptive folders that picture the unique vacation and meeting facilities of the Griswold Hotel and Country Club in Groton, together with a questionnaire for you to return immediately to aid your Reunion Committee to go all out in shaping the final arrangements to suit your pleasure. With a new Alumni Register coming out next year, your answers will also help your Secretaries to maintain accurate information and ensure adequate news for these columns. Please make every effort to spend part of your vacation with your classmates next June and by all means bring your wife, too. Mark the questionnaire accordingly and mail it now so as to be on the mail list for further reunion broadcasts. In any event, please return the questionnaire at once, even if it's impossible for you to attend. Many thanks!

The Alumni Association continues to recognize the distinguished service which the Class of '21 has continually rendered to M.I.T. and has given its highest award, the Bronze Beaver, to **Samuel E. Lunden** of Los Angeles, a member of our prominent group of West Coast architects and city planning consultants. Sam, who heads the firm of Samuel E. Lunden and Associates, 548 S. Spring Street, is the third member of '21 to receive this eminent award. It was presented by Alumni Association President **Samuel A. Groves** '34 on September 10 at the Alumni Officers Conference on the occasion of the dinner which formally opened the Harold E. Lobdell Room of the newly-completed Student Center Building. An Honorary Secretary of M.I.T. and member of the Educational Council, a member of the 25th anniversary Amity Fund staff, an officer and former president of the M.I.T. Club of Southern California and an officer of the Alumni Association on its new Development Committee, Sam has given unstintingly of his capable efforts to Technology. We salute him on his designation to the Institute's "Hall of Fame." Certificates of appreciation have also been awarded to four members of '21 for outstanding performance in carrying out the successful 1965 Amity Fund. This recognition was publicly given at the Conference to our Class Agent, **Ed Farrand**; to **Whit Spaulding**, Special Gifts Chairman for Eastern Pennsylvania; to **Chick Kurth**, Boston Chairman for Class of '21 Gifts;

and to **Sumner Hayward**, New York Chairman for Class of '21 Gifts. In attendance at the various Conference functions in Cambridge were George Chutter, Larry Conant, Josh Crosby, Chick Dubé, Ed Farrand, Sumner Hayward, Sam Lunden, Joe Morrell, Ace Rood, Ray St. Laurent, Bill Sherry, Ted Steffian and Joe Wenick. In sending us this much-appreciated special report of the proceedings, Sumner Hayward also says that **Norm and Betty Patton** of 237 Old River Road, Wilkes Barre, Pa., were spending their vacation at their usual spot in Brewster, Mass.

"Farmer" St. Laurent, as Helen calls him, just stopped running the jeep and clearing a better vista of the Camden hills from their home in Vinalhaven, Maine, to provide us with news of the Alumni Seminar, which he and Helen attended. Also present from '21 were Larry and Mrs. Conant, Ed Farrand, John and Mrs. Lee and Billy Sherry. Both the St. Laurents report an excellent three-day session on the general theme of the "Outlook on Man's Future" by distinguished panelists, concluding with an enjoyable reception by our revered President Jay Stratton '23 and Mrs. Stratton at their home on Memorial Drive. Ray also says that he met R. A. Stone '22, whose wife had attended her 40th reunion at St. Lawrence University, Canton, N.Y. Mrs. Stone reported that **Ken Bates** is achieving fame as professor and head of the university's mathematics department. Ray had a card from **Helier Rodríguez**, en route from Madrid to New York and California, and later spoke to him by phone in New York but was unable to arrange a meeting. Helier reported a successful trip. Ray tells of correspondence with Bill Rose on Educational Council matters.

Typical of his tremendous energy and wide scope of interests, Dr. **Augustus B. Kinzel** retired as Vice-president for research and engineering, after 39 years with Union Carbide Corporation, New York City, and immediately took over the administration of the Salk Institute for Biological Studies, San Diego, Calif. 92109. He replaces Dr. Salk as President. Gus will concentrate on operational matters and fund raising for the organization's new \$15 million structure, enabling the former president to direct research and academic development. Gus is also president of the newly-established National Academy of Engineering. In addition to his many activities in industrial and governmental agencies, he has for years been a member of the board of trustees of the Salk Institute. . . . Ace reporter **Sumner Hayward**, who sent us the news about Gus, writes that he and Betty went to the Cold River Camp of the Appalachian Mountain Club in North Fryeburg, Maine, for several weeks, after which Sumner went on a great Lakes cruise, a bus tour through the open-pit iron mine country of Minnesota and a subsequent train trip to Churchill on Hudson Bay. Unfortunately, he had to make a hurried return via St. John, N.B., to join his sister in Brockton, Mass., after her husband was hospitalized in a serious condition. Sumner, who lives at 224 Richards Road, Ridgewood, N.J., has accepted

additional community responsibilities in his recent appointment as a member of the board of the Ridgewood Blood Donors Association.

A most welcome card has arrived from **Steve and Celia Seampus**, showing a view of the Palace of Knights in the harbor of Rhodes, Greece. They write: "Greetings from Rhodes. Greece is a beautiful country and we are enjoying it very much. In a few days, we'll move on to Crete." Many thanks. Please tell us about the rest of the trip on your return, Steve. . . . **Harry P. Field** has a new home address from which to greet all trans-Pacific '21 travelers. He and Catharine now live at 1519 Nuuan Ave., King 161, Honolulu, Hawaii 96811. . . . Recent visitors to the Paradise of the Pacific were **Jack and Marge Kendall**, who have now returned to their home at 401 Hermosa Place, South Pasadena, Calif. 91030. . . . As you read this, **Dug and Betty Jackson** will touch down at Honolulu for a December day on their world cruise and then continue to the mainland for a side trip through Mexico and the Panama Canal. They will visit their daughter and her family in Florida for the holidays before returning to their home near Havre de Grace, Md. We await reports from Harry, Jack and Dug on their meetings and travel. . . . **Bob and Bertha Cook** have closed their summer home in Canandaigua, N.Y., to spend the winter at their home at 633 Royal Plaza, Ft. Lauderdale, Fla. 33301. . . . **Alexander J. LaPointe** has left Allen Park, Mich., and is now associated with the Glidden Company, 690 Hanna St., Birmingham, Mich. 48009. . . . **Robert A. Eckles** says he has moved from New Castle, Pa., where he was a partner in W. G. Eckles Company, and has a permanent home at 3280 Gordon Drive, Naples, Fla. 33940. We assume this indicates Bob's retirement. Yes? . . . **George and Anne Schnitzler** have moved from that interesting address of 2 Short St., Brookline, to a new home at 32 Gerry Road, Chestnut Hill, Mass. 02167. . . . **Elmer W. Davis** revised his home address to 1600 East Ave., Rochester, N.Y. 14610. . . . Professor **Reginald H. Smithwick** now makes his home on Foster St., Marblehead Neck, Mass. 01945. . . . **Harold F. Stose**, formerly of Wellesley Hills, gives his current home address as 21 Lakeview Gardens, Natick, Mass. 01763. . . . **Harry M. Ramsay** writes that he is no longer in Scottsdale, Ariz., and mail should be addressed to his new home, 268D Avenida Sevilla, Laguna Hills, Calif. 92651.

Edwin T. Steffian and Associates, Inc., architects and planners, announce a move of their offices to 19 Temple Place, Boston, Mass. 02111, where Ted, our Assistant Class Secretary, can be reached by phone at 617 542-1940. His two sons, John and Peter, both graduates of the University of Pennsylvania in architecture, are members of the firm in addition to a number of other associates. Ted makes his home at 46 Lakeview Ave., Cambridge, Mass. 02138. Ted and Reunion Chairman **Mel Jenney** have gotten together to produce an excellent notice, which you have already received, covering next June's reunion. Ted's attractive

sketches have enhanced the interest of our reunion mailings for many years. A letter from Mel says, in part: "Anne and I had a very pleasant weekend with Ray and Helen at Vinalhaven. The weather was so good and the hospitality so bountiful that we really didn't get around to very much discussion of reunion affairs!" Knowing Mel, there'll be plenty of midnight oil burned between now and June by him and his capable committee to ensure that our 45th will be at least one notch better than the memorable meeting at Plymouth in 1961. . . . Several letters and phone calls have come from **Edmund G. Farrand**, senior partner of the "firm" of Ed Farrand and **Ed Dubé**, '21 Class Agents par excellence. The first Ed is so pleased with your generous performance for last season's twenty-fifth anniversary of the Amity Fund that he has specifically asked for space in these columns to say so. He writes: "Miracles never cease in what our great Class of '21 can do! Our gifts to the Fund last year were more than double the year before, even though most of us had retired from income-yielding work. Please accept the deepest heartfelt thanks from all of our Class officers." We know that the new partnership of the two Eds hopes that our giving in this anniversary year for '21 will exceed last year's magnificent sum. We had expected Ed and Helen Farrand to spend some time with Maxine and your Secretary in Brielle after Alumni Day and their Maine trip to Bar Harbor, to the **Dave Woodbrys** in Ogunquit and to Ed's cousin in Belfast. Regrettably, Ed phoned that they had to return to their home at Kinchafoonee Lodge in Leesburg, Ga. 31763, and then visit with their son, David, in Roswell, N.M. Dave, incidentally, will be remembered as the little lad who, after a fishing trip with the late **Lou Hurley** at our 1941 reunion in New London, paraded his catch through the dining room on his way to give it to the chef for our dinner!

Robert F. Miller says he actually didn't move. The change in his house number to 6931 Chestnut Ave., Falls Church, Va. 22042, was due to a major renumbering in the area. . . . **C. Levon Eksbergian** has updated his home address record as Rock House, 131 Rose Tree Road, Media, Pa. 19063. . . . **Richard J. Spitz** has a new home at 1015 Old Post Road, Mamaroneck, N.Y. 10543. . . . **Leonard R. Janes**, general staff engineer of Commonwealth Edison Company, Chicago, resides at 2520 Noyes St., Evanston, Ill. 60201. . . . **John B. Baker** writes that he has retired as division chief engineer of the Timken Roller Bearing Company, Canton, Ohio. John continues to make his home at 2003 Yale Ave., N.W., Canton, Ohio 44709. . . . **Dr. Thomas P. Campbell**, consulting engineer with offices in the Colorado National Bank Building in Denver, gives his home address as 840 Gaylord St., Denver, Colo. 80206. . . . **Herbert Kaplan** is a neighbor of **Bob Miller**'s in Falls Church, Va. 22046, where his house number has been changed to read 6633 Gordon Ave. . . . **Rodman McClintock** writes that he has moved from Pittsburgh, Pa., to the New York area, where he lives on Mt. Holly Road, Katonah, N.Y. 10536. . . .

C. Arthur Newton, formerly the purchasing agent for American Viscose Corporation in Philadelphia, has retired and has given up his Strafford, Pa., home. Mail can now be addressed to him at Box 168, R.D. No. 1, Glenmoore, Pa. 19343.

Thanks to the eagle eyes of Ed Farrand, we have the latest story on **John W. Barriger**, which appeared in the Amarillo (Texas) Daily News last September 2. The story concerns the visit to Denison, Texas, of former President Dwight D. Eisenhower, son of a railroad man, who was born in a house near the tracks of the Missouri-Kansas-Texas (Katy) Railroad in Denison. On going to the house of his birth, General Eisenhower met John and said: "So you're the president of the Katy Railroad." "Yes," replied Barriger, "and I have always wanted to come here and personally meet the son of one of our former employees." Earlier, John had typed one of his famous post cards to Ray St. Laurent, saying, in part: "Nursing a sick railroad back to health will deprive me of the pleasure of being at M.I.T. on Alumni Day, but I am looking forward to seeing you at that event and at the reunion in 1966." . . . We've tried to piece together the major details of the seventeenth foreign trip made by **Saul M. Silverstein** last spring in the interest of Rogers Corporation, Rogers, Conn. 06263, of which he is president. From his forty-six pages of documentation (single spaced typing on both sides of the paper!), Saul visited ten countries and twenty-five cities in six weeks for innumerable lengthy business contacts. Back long enough to assure himself that the semi-annual report would show giant forward strides, he attended Alumni Day and almost immediately was off on a "quickie" ten-day jaunt to Mexico. For one reason why Rogers' earnings doubled last year, see the interesting story entitled "Synthetics: Good Fit in Footwear," appearing in "Chemical Week" for May 1, 1965. It tells about coming applications for Rogers' "Poron," a breathable vinyl used for the last five years for shoe insoles and linings, which is expected to be marketed as a material for shoe uppers in competition with DuPont's "Corfam." Continuing, for Saul's benefit, the Thailand notes concerning our late classmate, Prince Mahidol Songkla, the press has noted that Queen Sirikit, wife of Prince Mahidol's second son, the current King Bhumibol, is credited with the tutelage that led to the recent winning of the "Miss Universe" title by Thai beauty, Aspara Hongsakula.

The Devin-Adair Company, 23 East 26th St., New York, N.Y. 10010, announced the publication at \$3.95 of the novel by **David O. Woodbury**, "Mr. Faraday's Formula," a Dean Riam suspense story forming the second episode in the career of Dave's alter-ego, who was introduced several years ago in his first work of fiction, "Five Days to Oblivion." Dave has written many non-fiction books on science, exploration and natural phenomena but the publisher says: "At no time has he spun a story so taut with suspense and so intriguing to anyone who wonders about the possibilities of this nuclear age." We suggest to Dave and India that

they visit us in Brielle to get their minds off the fantastic way the salty Dean learned to control gravity at the "Eastern Technical Institute" in Cambridge. A happy note from Dave in reply says, in part: "As I seem to be about the only member of the Class who hasn't retired, you'll have to be patient till I get a break and there is something which takes us from Ogunquit to the New York area." . . . **Ernest R. Gordon** of 8841 Jupiter Drive, El Paso, Texas 79925, has been claimed and won by Course XII, now geology and geophysics, as the heir and assignee of Ernie's former Course III, mining engineering in our days and now metallurgy! Since many Technology course numerals have new titles, this sort of pirating could cause an avalanche of shifts. Ever look up what your course number denotes now? . . . **Col. Philip M. Johnson**, who, with Mrs. Johnson, is a regular attender at Alumni Day, reports that they live at 41 Norwood St., Portland, Maine 04103. . . . **Arnold R. Davis**, technical service manager of American Cyanamid Company, lists his home as 95 Orchard Lane, Berkeley Heights, N.J. 07922. . . . **A. Ilsley Bradley** writes that he is continuing his real estate business at 1501 Euclid Ave., Cleveland, Ohio. He makes his home at 326 Bulkley Blvd., Cleveland 44115. . . . **William C. Kohl** has a new retirement address and mail should now be sent to P.O. Box 3447, Miami, Fla. 33101. . . . **S. Paul Johnston**, the new director of the Air and Space Museum of the Smithsonian Institute, has moved his family to 5112 Westpath Court, N.W., Washington, D.C. 20016.

Monroe C. Hawes resigned as Secretary of the Board of Assessors in his home town of Sea Girt, N.J., after 28 years of service under six administrations. Munnie, a partner in the real estate and insurance firm of Hawes and McAfee, 111 Union Ave., Manasquan, N.J. 08736, was in the sports news as the runner-up in the Bristol Memorial Golf Tournament at the Manasquan River Golf Club in Brielle, N.J. . . . It is a most pleasant experience to hear the youthful voice of **Alexander D. Harvey** on the phone. Most recently, Dan called us after he had talked with **Jack Kendall** and gave us the latest news from South Pasadena. For some reason, our conversation switched from '21 affairs to a discussion of how the New York Botanical Garden inhibits the growth of grass! . . . Guests of the **Howard B. Tuthills** at their summer home, Wilderness, on Lake Michigan, were grandchildren Vicki and Parker, children of their son, Victor. . . . Your Secretary had the pleasure of representing M.I.T. in the exercises marking the two hundredth anniversary of Rutgers Preparatory School, New Jersey's oldest, founded with Rutgers University but now independent. Unlike the university, it has been in continuous operation since its establishment. . . . **Mrs. Lauri F. Grover**, widow of Clayton D. Grover '22, has written a much-appreciated letter, thanking those in the Class of '21 who knew Clate for our expression of sympathy in his recent most untimely death.

A new calendar year will have made its appearance before we meet here again,

a year which will see many of us gather once more at a reunion. We wish it could comprise all of us who still remain out of that larger group that was associated at the Institute. Father Time has seen fit to impose a decreasing limit on the number of us who can attend and we hope you will not fail to take advantage of this opportunity to see old friends now. So, whether or not you can be there, take a few moments while it's on your mind, complete that questionnaire and mail it back at once with your holiday greetings to your Secretaries! We certainly hope you'll say you will attend the reunion if there is any possible way you can manage to be at the Griswold next June, and that you'll do your best to find a way! Until we see you then, all of your Class officers and committeemen send to you and yours the gayest Season's Greetings and wish for you the best of health, happiness and prosperity in the New Year!—**Carole A. Clarke**, Secretary, 608 Union Lane, Brielle, N.J. 08730; **Edwin T. Steffian**, Assistant Secretary, c/o Edwin T. Steffian and Associates, Inc., 19 Temple Place, Boston, Mass. 02111; **Melvin R. Jenney**, Reunion Chairman, c/o Kenway, Jenney and Hildreth, 24 School Street, Boston, Mass. 02108.

'22

As prophesied, the Sixth Alumni Officers Conference was especially well attended by the Class of '22. **R. A. Stone** of Milford, Conn., was busy passing around a "get well" letter to **Herb Hamm** for our signatures. **Dale Spoor**'s personal message to us all as well as his letter as 1922 Class Agent was to give a little more than usual to the Alumni Fund. Dale stayed on for a few days to enjoy the Alumni Seminar regarding "The Outlook on Man's Future." . . . We heard that **George B. Bailey** has retired to a consultant's category. . . . **Howard J. Duge** is enjoying his construction company in Greenwich, Conn. . . . **Chet Greening** is enjoying retirement in a little cottage at Westport. . . . **Earl H. Eacker** has retired to his hideaway in Vermont but still enjoys coming back to Beacon Hill frequently. . . . **Theodore T. Miller** has retired from the W. R. Grace and Company to become a consultant in the Hancock Building, Boston. Ted still enjoys Pride's Crossing as a good place to live. . . . **Parke Appel** is always busy working for M.I.T. and as an investment consultant in Boston. . . . **Don Carpenter** was looking athletically fit at the head table of the Conference as Past President of the Alumni Association. His new program of long range planning committees will be most constructive for the future of the Association. . . . Your Secretary is having an interesting time on the Board of the Erie Lackawanna while singing the song "I've been working on—," etc. **Henry S. Dimmick** is retiring to Cataumet, Mass., on Cape Cod, Post Office Box 33.

The results of the returns at the end of two weeks for the 45th Reunion Questionnaire indicate 34 attending, 12 doubtful and 12 cannot come. This 9% sample has

been put through our computer indicating a 59% attendance in 1967! We will keep you informed of the trend toward the Winona Club on the Cape. An enthusiastic letter accompanying the report from **J. Russell Hemeon** of Trenton follows: "Dear Parke: Enclosed card filled out for the 45th Reunion. The answer is definitely YES for Grace and Gus. We had such a good time, and met so many friends at Swampscott that we want to come again. More power to you, and the good work you are doing as President of the Class of 1922. In July 1963 I was "fired" by General Motors for reaching age 65. So I am now in retirement with a very limited consulting activity in the fluid power field. Also enjoy putting on illustrated lectures on hydraulic equipment for State and Federal Education Programs. 1964 was our big year. A two week vacation cruise to Bermuda in June, and then in September and October we drove to California and Mexico. A grand trip, primarily to see our son and family, with General Electric at San Jose, Calif. Liked it so much that I may repeat next year."

We were most pleased to receive the text of a speech of **Crawford H. Greenewalt** entitled "Philosophy of Business Leadership" given at the International Industrial Conference in San Francisco. It is important to our country that more people adopt this philosophy. Crawford was awarded an honorary Doctor of Laws degree at Bowdoin College Commencement in June as a "Chemist, Engineer, Ornithologist and Author" and was told "today you are honored by a college long involved in Ornithology, always admiring the rugged individualist and uncommon man, for your newer science and your newer skills, for your creativity as an artist and author." . . . **Lloyd A. Elmer** has retired from Bell Telephone Laboratories and is now in consulting work for McKiernan-Terry division on the design of tape recorders. . . . **Horace W. McCurdy** represented M.I.T. in October at the inauguration of the new President of Seattle University. We certainly hope to see Horace and his bride of June 1922 at our 45th. . . . Professor **Joseph H. Keenan** directed a summer workshop in July concerning Thermodynamics which involved lectures, discussions and problem-solving sessions. . . . **Minot R. Edwards** has sold his Weymouth home and retired to Houston, Texas, having finished the second of two years teaching at Boston's Chamberlayne Jr. College, a major size institution with 1200 enrollment. He had previously retired after 17 years of army ordnance and post office engineering, starting with Bazooka and following with Nike rocket design and four years as Deputy Chief of the southern Europe ordnance procurement center in Rome, Italy. His final four years concerned the post office automation program. Among our new addresses are those of Professor **Albert P. Powell**, Bradenton, Fla.; **Arnold E. Howard**, Chelmsford, Mass.; **Russell Hopkinson**, New York City; **Earnshaw Cook**, Baltimore, Md.; **Roy C. Burris**, Hallandale, Fla.; **Charles S. Comey**, St. Clair Shores, Mich.; **Thomas H. Swisher**, Mountain View, Calif.; **Arthur E. Meling**, Annandale, Va.; **Alfred Wolf**, Berkeley,

Calif.; **Victor Didier**, Pittsburgh, Pa. The sympathy of our Class is extended to the families of **Theodore A. Schwamb** of Milton and **Robert P. Russell**, of Lisbon Hill, N.H. Robert Russell's technological contributions during World War II earned him a number of high governmental and scientific awards. As President of Standard Oil Development Company he directed the refining process known as Fluid Catalytic Cracking which made possible enormous increases in the production of hundred-octane aviation gasoline. He was also the developer of a process of synthesizing Toluene, a component of TNT, from petroleum. For his research and development work in the fields of flame throwers, incendiary bombs, and smoke generators, Dr. Russell received the Medal of Merit, the highest award the United States Government makes to a civilian. At his death he was Chairman of the Trustees of R.I. Research Institute in New York, a consultant to W.R. Grace and Company, a Director of the Cosden Oil and Chemical Company, and a Director of the Nashua Corporation in New Hampshire.—**Whitworth Ferguson**, Secretary, 333 Ellicott Street, Buffalo, N.Y. 14203; **Oscar Horovitz**, Assistant Secretary, 33 Island Street, Boston 19, Mass.

'23

David W. Skinner, Vice-president and general manager of Polaroid Corporation, our class President, is reported in the News Tribune of Waltham, Mass., as "serving as a section chairman in the 1965-66 Massachusetts Bay United Fund." Mr. Skinner is a member of the M.I.T. Council and is a member of the advisory council of Nichols College. He is a former president of the Cambridge Chamber of Commerce. . . . The Home Builder's Journal, Los Angeles, Calif., for June reported that **John E. Burchard**, national authority on architecture and housing, has been named consultant to Marincello, a proposed 2138-acre Marin County community. Dr. Burchard retired in 1964 as dean of the School of Humanities and Social Science at M.I.T. . . . **John H. Thompson**, 407 Lippincott Avenue, Riverton, N.J., has sent in word that **Edmund J. Thimme** will become general manager of the Electric Department of the Public Service Electric and Gas Company, Newark, N.J. Also that **Roger J. Evans** of 30 Farm Road, Trenton, N.J., has been promoted from assistant division superintendent to division superintendent. The Public Service News, August 1, 1965, states that "Mr. Thimme is currently general superintendent of electric distribution, a post he has held since 1957. He joined Public Service as a draftsman in the summer of 1922 while still a student, received his degree in electrical engineering from M.I.T. in 1923 and became a cadet engineer after graduation. He served in the Berger and Passaic divisions until 1949, when he became industrial relations manager at the general offices in Newark. Mr. and Mrs. Thimme live at 376 North Fullerton

Ave., Montclair, N.J. Mr. Thimme was born and raised in Paterson and graduated from Paterson High School. Long active in community affairs there, he has served as president of Alhaha Council, Boy Scouts of America; campaign chairman and a member of the executive committee of the Paterson Community Chest; executive committee, Paterson Red Cross; board of directors, Paterson Chamber of Commerce and on the board of directors of the Paterson Kiwanis Club. He lived at Packanack Lake, Wayne, for 16 years before moving to Montclair in 1957. He has also served as honorary secretary of M.I.T., on the board of trustees of the Newark Welfare Federation and as vice-chairman of the Council of Social Agencies, Newark. He has been a member of the North Jersey Country Club, Glen Ridge Country Club and the M.I.T. Club of Northern New Jersey. Mr. Thimme has been active in committee work with the American Institute of Electrical Engineers; Edison Electric Institute, New Jersey Utilities Association and the New Jersey Society of Professional Engineers."

... "Mr. Evans started with Public Service, July 16, 1923, as a Cadet Engineer in the General Office, Newark. Upon completion of his cadet training course in 1926, he was made district foreman in the Princeton District of the Company's Southern Division, Electric Distribution Department. Subsequently he held the positions of assistant district superintendent and district superintendent in the Trenton District and was promoted to assistant division superintendent in the Trenton area of the company in 1943. He is a member of the Engineer's Club of Trenton, Trenton Rotary Club, the Trenton Country Club and Mercer Lodge No. 50 F. and A.M."

Arthur C. Craig, 202C Cherry Hill Apartments, Merchantville 10, N.Y., technical instructor in the Electronics Department of Temple University's Technical Institute, retired in July, 1965. He has been at Temple's Technical Institute for nine years, teaching courses in physics, mathematics, laboratory science and electronic theory. He is a native of Camden, N.J. Before turning to teaching, Craig was employed with the Bell Telephone Company; L. T. Klauder, Consulting Engineer, Philadelphia; Midwest Theatre Supply Company, Cincinnati; and R.C.A., Camden. . . . **Herbert J. Stark**, actuary of Metropolitan Life Insurance Company, on July 2 observed his 40th anniversary with Metropolitan. Mr. Stark, who earned a B.S. degree from the College of the City of New York in 1921, with Phi Beta Kappa honors, did his graduate work at M.I.T. Since Mr. Stark joined the company as an occupational rating clerk in the statistical bureau in July, 1925, he has advanced steadily. Following successive promotions in the actuarial division, he was named an assistant actuary in 1942. His appointment as associate actuary followed in 1948, and in 1953 he was promoted to an actuary. At present Mr. Stark and his wife, the former Miss Sylvia A. Weyl, reside at 200 Central Park South, New York City. He enjoys chess, bridge and painting. . . . **Henry W. Armington**, of 99 Church

Street, Northboro, Mass., died August 14, 1965. Mr. Armington was owner of the Stewardship House, a firm which raised funds for charities. Born in Boston, he attended schools there and M.I.T. He lived in Worcester for ten years before moving. He was a member of Trinity Church. He leaves his wife, Linnea A. (Kuhlman); three sons, Peter of Hopkinton, Bruce C. of Woburn and Gary W. of Northboro; a daughter, Mrs. Carol F. Daland of Washington, D.C., a stepson, Craig A. Johnson of Sudbury; a stepdaughter, Mrs. Judith A. Gale of Sudbury and a sister, Dorothy F. Armington of Boston and five grandchildren.

John Ward Beretta has forwarded interesting news of several classmates as follows: From the San Antonio Light of August 22, 1965, Geophysical Service Inc.'s motor vessel Cecil H. Green, specifically designed and built for seismic exploration, is expected to be ready for sea trials in early September. Designed to GSI specifications by Philip F. Spaulding and Associates, naval architects and marine engineers of Seattle, the Cecil H. Green is nearing completion at Mangone Shipbuilding Company, Houston. The vessel was christened July 11 in honor of **Cecil H. Green**, honorary board chairman of GSI and a Vice-president and Director of Texas Instruments, Inc., GSI's parent company. Mrs. Green broke the traditional bottle of champagne against the bow of the ship carrying her husband's name. The Cecil H. Green is 126 feet 10 inches in overall length, with 32-foot beam and 8-foot draft. The vessel is fully air conditioned for service in hot climates and heated for operations in cold areas. The newspaper article includes a picture of the ship and detailed specifications relative to its construction and installed equipment. His classmates will recall that Cecil and his wife have made a munificent gift to M.I.T. in the form of the Earth Sciences Laboratory, the first skyscraper building on the campus of M.I.T. (incidentally reported to be the highest building in Cambridge). John goes on to say "My wife and younger daughter and I returned in the early part of August from a two-months trip to Scandinavia. We had a wonderful time sightseeing and visiting various interesting points in Denmark, Norway and Sweden. While we were in Oslo, Norway, I tried to get in touch with our esteemed classmate, **Harold R. Bjerke**. Unfortunately he was away on vacation at the time. I wrote him a note, however, and on my return found a note from him expressing regrets that we did not get together. He stated that he and his family were sojourning at their cottage in the mountains, and returned the day after I left Oslo. He stated further that a little before I arrived he had a nice visit with **Franklin G. Clement** and his wife. Harold also sends the news that next year, about March 1, he and his wife are going to pay a visit to his eldest son, who is also an M.I.T. graduate, now living in Pittsburgh, Pa., with his family.

The Lincoln County News of Damariscotta, Maine, carried notice of the re-election of **Theodore M. Edison**, West Orange, N.J., as Secretary of the Monhegan Associates, Inc., at the 11th annual

meeting of the organization, which is devoted to the preservation of the wild land of the island. The organization is composed of 166 year-round and summer residents. Mr. Edison, an internationally known conservationist, spoke on the importance of protecting the island's wild land from the ravages of fire.

Word has been received of the death on October 4, 1965, of **Herman F. Pike** of Norwood Farms Road, York Harbor, Maine. Mr. Pike was a retired investment counsellor for the Boston firm of Standish Ayer and Wood. Mr. Pike, a resident of Winchester, Mass., for more than 30 years, moved to York Harbor in 1962. He was a graduate of Phillips Andover Academy, class of 1919. He was a director of a number of civic and business organizations such as the New England Lime Company, the Winchester Country Club and the Winchester Savings Bank. He leaves his wife, Joan (Abbott); two sons, John A. of Lincoln and Dixon S. of Rochester, N.Y.; one daughter, Mrs. Joseph S. Sutton of Yarmouth, Maine; and nine grandchildren.

Bernard L. Zangwill, Apt. 608-I, 55 Highland Road, Bethel Park, Pa. 15102, died on May 29, 1965.

The Alumni Office has advised of the following changes of address: **Kenneth S. Andem**, 23005 Adeline Drive, Burlingame, Calif. 94011; **Charles Goldstein**, 79 Milk Street, Boston, Mass. 02109; **Joseph P. Keegan**, Joseph P. Keegan Associates, 1202 Kaneville Road, Geneva, Ill. 60134; **Richard W. Lambrecht**, 135 Tonnancour Place, Grosse Point Farms, Mich. 48036; **Donald H. McNeal**, 1021 Arlington Blvd., Arlington, Va. 22209; **Stewart E. Reimel**, 804 Cornell Road, Fairfax, Va. 22030; **Charles G. Ball**, 8 Legion Rd., Weston, Mass. 02193; **Warren N. Center**, 59 Autumn Street, East Lynn, Mass. 01902; **Roger J. Evans**, 30 Farm Rd., Trenton, N.J. 08638; **Hugh S. Ferguson**, P.O. Box 637, Barnstable, Mass. 02630; **Joseph H. Scholtz, Jr.**, Sholtz and Company, 100 Wall Street, New York, N.Y. 10005; **Myrna S. Howe**, 397 South El Melino Avenue, Pasadena, Calif. 91106; —**Forrest F. Lange**, Secretary, 1196 Woodbury Avenue, Portsmouth, N.H. 03801; **Bertrand A. McKittrick**, Assistant Secretary, 78 Fletcher Street, Lowell, Mass. 10852.

'24

One of the Alumni Fund activities is Special Gifts Solicitation, which takes place in the fall. **Bill Correale** is our chairman in New York, and one night in early October your Secretary sat with him at a dinner meeting to get this off the ground. Bill's work on the New York building code has taken longer than originally planned. There's about another year to completion. Bill's counterpart in Boston is **Fred Ashworth**. Fred is having the experience common to many retirees; he's busier than ever before. Next spring, if all goes well, they will be taking the National Cathedral tour of British cathedrals.

E. Donald Early retired a year ago as Vice-president of Southern Services Inc., in Birmingham. He purchased a home in Venice, Fla., and last summer the Earlys moved in. . . . Also retired, it is to be assumed, is **John J. Grabfield**. His address has changed from New York to Ft. Lauderdale. . . . In June the **R. Paul Schreibers** left Michigan for a month's vacation in Europe. On their return Paul was scheduled to move to New England, where he was to be Regional Office Supervisor for Dow Corning. We haven't heard from him since May, but we assume the switch was made.

As reported last month, the **Ambachs** had a reunion with the **Fitches** in Chile, and just in time. In September came news that Johnnie has been shifted back to Rio de Janeiro, which he left five years ago.

In September at the Sixth Alumni officers Conference one of your classmates received a high honor, the coveted Bronze Beaver Award. It was **Clarence M. Cornish**, and his citation read: "Honorary Secretary since 1949, Vice-president at large of his class, President of the M.I.T. Club of Mexico from 1955 to 1960, the continuing success of the M.I.T. Fiesta in Mexico City is in large part because of his effective and devoted efforts." It was a well-deserved honor. You will remember **Paul Cardinal** suggested the possibility of a '24 reunion at next winter's Fiesta. We haven't yet heard what response he had, but it will be a bang-up affair if it comes off, with Bronze Beaver Cornish to lead us.

Phil Bates dropped in one day in late September. The much-travelled Bates's had been at Sugar Hill in New Hampshire, hoping to see a bit of autumn foliage, but they had to leave too soon for that. Paul Cardinal reports that there were five at the '24 table at the N.Y. Chemist's Club in September. **Ray Forsyth**, **Bill MacCallum**, **Nate Schooler**, and **Howard Stevens** were present in addition to Paul. Howard has recovered nicely from a heart attack. . . . We just recently caught up on another disability. **Griff Crafts** had a slipped disc in late May, and was laid up for the better part of two months.

Jack McCoy has just rounded out 38 years with Tidewater Oil Company and will retire in less than two years. The McCoys have three married daughters and a grand total of nine grandchildren, "so a complete family reunion is a strenuous affair." That puts him one up on **I. Henry Stern**, who has a score of seven. However, Hap is elated because the seventh is the son of his only son, "so he will be able, I hope and pray, to add another Stern to the list of M.I.T. alumni." Hap seems a bit confused, however, on one score. "I can hardly wait until he is old enough for me to tell him to look up Chick Kane when he goes up to the 'State to register for the Class of 1985." By then your Secretary will have long since departed these Hallowed Halls. . . . **Chris Conway**, with four grandchildren, is not even in competition. He is still with A.T.&T. at their New York headquarters. . . . After 37 years in the steel and machine tool industry, **George**

McIlveen has joined the Cincinnati Procurement District, Army Ordnance. Recently he received an official commendation "for outstanding performance."

So much for now. It seems a bit peculiar on this beautiful mid-October day to be thinking so far ahead, but a Merry Christmas to all of you.—**Henry B. Kane**, Secretary, M.I.T., Room E19-439, Cambridge, Mass. 02139.

'25

As these notes were being prepared, word has arrived that **Mac Levine** died on October 11, 1965. With his passing, the class loses one of its most devoted workers, and the Alumni Association loses one of its most loyal members. Despite the fact that Mac was in failing health during the past year, all of you I am sure realize the tremendous effort he put forth in connection with the 40th Reunion Class Gift. The success of this program was in large measure due to Mac's all-out effort, along with **Sam Spiker**'s ever-willing cooperation. Funeral services were held on Tuesday, October 12; and Mac's wife, Anne, requested that flowers be omitted but that memorial gifts might be made to the Mac Levine Scholarship Fund of M.I.T. through the Alumni Fund, or to the Mac Levine Fund of Temple Emanuel in Worcester, Mass. Time does not permit getting together a complete résumé of Mac's many activities, but these will be covered in a later issue of the Review.

Notes of several other deaths have been received. **George W. Elkins** died on May 8, 1965, in Farmington, Conn. George joined a group of classmates about a year ago and spent a day on the M.I.T. campus. He told me later how much he enjoyed meeting with classmates he had not seen in many years, and seeing some of the many things taking place at M.I.T. George spent a great deal of his life working in Scotland as Technical Adviser to the Singer Manufacturing Company.

Lawrence S. Cusolito passed away at the Peter Bent Brigham Hospital in Boston on August 25, 1965. He had made his home in the Mattapan area of Boston, and for 30 years had been a retail executive for the Lincoln Stores. He began his career with William Filene & Sons of Boston, and then went with the Lincoln Stores until he opened his own shop, the Taunton Trader, in Taunton. In more recent years, he was also associated with Enterprise Hardline, Inc., and with Mal's Department Stores.

On a more pleasant note, two of our classmates got minor mention in two adjacent columns on the social page of the Boston Sunday Herald of September 12. **Ed Kussmaul**'s daughter, Miss Barbara Jeanne, was married on September 11 to Eugene Fioravanti, at the First Parish of Westwood, United Church. The bride was given in marriage by her father, Ed. . . . The other column indicated that "Weih" Weihmiller's son, Gordon Richard, had been married on the same afternoon to Miss Jane Bray of Hingham,

Mass. This wedding took place in Hingham in the Old Ship Church.

M.I.T.'s new Materials Science and Engineering Building was dedicated on October 1, 1965. Prior to this, a day and one-half were devoted to presentations by a number of the professors carrying on materials research at the Institute. One of the guests present at this affair was **John M. Campbell**, who is Scientific Director of the General Motors Research Laboratory. John has recently been elected President of the Engineering Society of Detroit for the coming year. This is probably the largest local engineering society of its kind, with over 6,000 members drawn from all branches of engineering. In addition, the society has 52 affiliated technical societies.—**F. L. Foster**, Secretary, Room E19-702, MIT., Cambridge 02139.

'26

This has been a busy week; even out at Pigeon Cove over the weekend there was too much popping to get at the Class Notes. The painters kicked over a bucket of stain in the attic and it soaked thru the living room ceiling. The fellow laying a flagstone walk drove a stake thru the middle of a buried 100-foot plastic pipe from the quarry to the garden and the mason goofed up the fireplace so it had to be all torn out and rebuilt. With time running out I reached for the Class Notes folder when I awakened this morning and knocked the transistor radio to the floor and to pieces. Nonetheless at 5 a.m. I was sorting out Class Notes items in bed and now at 10:30 p.m. I am putting them together. Thanks to a few classmates who wrote notes in a space provided on the Alumni Fund envelopes for "News to your Class Secretary" we have the following: From Punta Gorda, Fla., "Dear George: I am writing this short memo in recognition of your pleas over the years for contributions to the Class Notes. Greetings to the Class! We are well and are enjoying retirement in South Florida. Regards, Maurice Ash." . . . From Erie, Pa., "Retired from General Electric Company June 1, 1964. Just returned to Erie with our yacht 'Compromise' after spending the winter in it in Florida and the Bahama Islands. Enjoying retirement immensely. Ralph Collessner." . . . From an old 2/3 namesake of mine, **George Warren Bates**, "Retired from public schools (mathematics instructor) on January 1, 1964. (Last 34 years in Medford High School, Medford, Mass.) Still teaching at Lincoln College (Northeastern University evening school, math instructor); organist and choir director Cohasset Congo Church, 35 years to date. Married, six children, 13 grandchildren." . . . From half of the famous banjo duet "Am looking forward to 1966 reunion. The Manchas are well and happy. I still contend that retirement is like dying and going to Heaven! Suggest you all try it. Best regards, Ray Mancha." . . . It must be more than coincidence that all who found time to write but one are retired! The one was **Jay Goldberg**, who stated

that he was unable to get to the class gift committee dinner in New York in May because he was in Japan. We appreciate hearing from these classmates. Incidentally, **Austin Kelly** advises that our class gift program is moving toward its goal. Since you will receive these notes in December, let me, as one of Austin's little helpers, remind you to be sure and include the class gift in your year end tax thinking. . . . We were reading an article in Time recently on the problem of national conservation when we came across the following paragraph, "The President and Lady Bird are hardly alone on the ramparts. Private preservation efforts have never been more widespread on both large and small scales. At the small end are one-shot campaigns waged by dedicated groups and individuals such as New York's **Richard Pough** and Washington's Sheafe Satterthwaite. One of Pough's current projects is to help preserve a 3,400-acre tract of Gulf Coast prairie land, one of the last nesting areas of the near-extinct Attwater's Prairie Chicken. So far, \$70,000 has been collected; and \$300,000 more is needed." Dick has reached great heights of achievement in the field of conservation and I'm sure has had a marvelous time doing it. I can recall meeting him, field glasses in hand, on the wintry beach at Gloucester when we were undergraduates, and he has been at it ever since! Our class President has taken on additional duties, according to a recent news release. **David A. Shepard** and Dr. Horton Guyford Stever have been elected to the Board of Trustees of the System Development Corporation, SDC Board Chairman William T. Golden announced today. Mr. Shepard is an executive vice-president and a director of Standard Oil Company (New Jersey). Dr. Stever is president of Carnegie Institute of Technology and chairman of the Air Force Scientific Advisory Board. SDC, a non-profit corporation chartered to work in the public interest, specializes in the design and development of computer-based command control and information management systems for military, governmental, scientific and educational applications. The firm, headquartered in Santa Monica, Calif., has major facilities in Falls Church, Va.; Colorado Springs, Colo.; Lexington, Mass.; and Paramus, N.J." We hate to close with obituaries, but we always seem to put them off until last. We regret to report the passing of **William P. Hinckley** of Reading, Mass., and **Richard W. Avery** of Groton, Conn. For the class our sincere sympathy to their families. Well, as you see, it's been a long day, but by the time you read this it will be Merry Christmas to everyone in the grand and glorious class of 1926!—**George W. Smith**, Secretary, E. I. DuPont de Nemours & Co., Inc., 140 Federal St., Boston, Mass.

closely tied to the school. He was born there and after graduation from M.I.T. he was with du Pont for three years and then returned to Tyrone. His wife was co-head of the school with him. Before Tech, Tom went to Princeton for two years. It is fair to say that he was a loyal alumnus of both institutions. In my file he expressed himself as "very close to M.I.T. and very proud of it." The five children pictured in a snapshot sent in for the 30th reunion are mighty fine looking. The oldest son was a Navy jet pilot at that time.

Now that the Christmas season is at hand, may I remind you all that a Christmas card to your class secretary is a good way to bring him up to date, at a time when you are writing similar information to friends and relations. This program has been in effect for the past two years. Two years ago the returns were admittedly disappointing but last year was better.

The following good news has been received from **Glenn Jackson**: "I have signed a contract with United Merchants and Manufacturers, worldwide textile manufacturers and owners of Robert Hall Clothes, to act as coordinator of a team of textile experts that will survey and recommend changes in the Iranian textile industry. I will live in Teheran, a city of 2,000,000 people, and am shipping over enough furniture for an apartment, where all class of 1927 men will be invited to stay if you come our way. We should be back about November, 1967—and this breaks my heart; we'll miss the 40th reunion. We'll spend about two weeks in Italy, Switzerland, Lebanon, etc., before going to Iran. New address is United International Division, Tchitsazi Teheran, Nazy Abad Ave., Teheran, Iran." Twenty-two alumni live in Teheran and the Alumni Association has already asked Glenn to work on the Fund there. A busy life.

For a long time I've had in my things-to-write-about in the notes file a copy of The Report of the President for 1964. In it he makes a comparison of "Boston Tech" of the class of 1923 with the present Institute. The whole report should be read but here are a few of the statistics: Registration of candidates for advanced degrees, then 91, now 3511; proportion of students from Massachusetts, then over 50%, now 10%; women students, then 45, now 300; students living in dormitories, then 8%, now 50%. At last year's Alumni Officers Conference it was noted that today more than 5% of all students are in post-doctoral work. The undergraduate registration was about 2700 when we graduated, it dropped to 2000 during the depression and is now about 3600.—**Joseph S. Harris**, Secretary, Masons Island, Mystic, Conn. 06355.

over the meeting. Others in attendance were **Florence Jope**, **William Carlisle, Jr.**, **Jack Chamberlain**, **Carl Feldman**, **Carney Goldberg**, **Roger Haven**, **Thomas Howes, Jr.**, **Fred Lewis**, **Dave Mathoff**, **Clark Merrick**, **Arthur Nichols**, **Dave Elkins**, **Walter Smith**, **Hermon Swartz**, **Willis Tibbets**, and **Abe Woolf**. At this time Abe Woolf formally accepted the chairmanship of the 40th reunion. Some of the committee jobs were passed out, and after a mild discussion the majority favored holding another on-campus reunion. The final selection of a locale will probably be determined by a survey of class members who are likely to attend. Also at this meeting Jim Donovan graciously accepted the job as chairman of the 40th class fund and outlined tentative plans for enrolling regional chairmen throughout the country. Doubtless we'll all hear from Jim and Abe regarding these matters in the near future.

The **Ralph Theodore Jope** Fund at M.I.T. has received remembrances from classmates far and wide, from friends, from business associates, from M.I.T. associates and from many, many members of other classes at M.I.T. who knew and liked Ralph.

One of the last notes your secretary received from Ralph is dated June 28th and follows:

"During the past week **Carl F. Myers**, Course VI-A, and his wife, Francis, visited Cambridge from their home in Clermont, Fla., where Carl and Frances are now residing. Their time is taken up in enjoying Florida's weather and in handling the affairs of a rather extensive orange grove. Carl retired from Ebasco approximately two years ago. Carl and Frances were delighted with the growth of M.I.T. since their last visit here. The Myers and the Jopes had lots of fun comparing nostalgic notes. Carl and Frances plan to visit some of their Course VI-A friends when returning to Florida through New York City.

"**Huyler Ellison** called me to mention that he and Carl had a very pleasant day in Freeport, where Huyler has lived since he retired from A.T. & T.

"The above may be of some help on the class notes. As always, my best."

And a note from Jim Donovan reports that the Class of 1928 was well represented at the Annual Alumni Officers Conference held in Cambridge, September 10 and 11. In fact, 1928 probably had the largest attendance of any class. **Carroll C. Smith** came up from Washington; **Rudy Slayter**, **Bill Carlisle** and **Jim Donovan** were the locals; **George Palo** and **Jim White** came up from Tennessee; **Newt Foster**, who has done a lot of work for M.I.T., came up from New Jersey. **Bob Larson** and his family came up. **Tom Harvey** came in from Indiana and **Henry Moggio** from Penn.

Henry is running one of the last silk factories in the U. S.; and concurrently is very active in the community, among other things being on the School Committee of Allentown, Pa. . . . You probably got a large number of lists and boiled things down for yourself; but if not, you might want to report that the Alumni Fund awarded certificates of appreciation

'28

At 6:00 p.m. on October 7 a group of members of the Class of 1928 met at the Faculty Club in Cambridge for an intense discussion of our 40th reunion and our 40th class gift. **Jim Donovan** presided

'27

Tom C. Grier, who was the head of the Grier School in Tyrone, Pennsylvania, died on August 16. His whole life was

for outstanding work to **Bill McClintic**, Special Gifts Chairman for 1928 New York, and to our Class Agent, **Charlie Worthen**—also to **Jim Morse** who was a very effective Regional Chairman in San Mateo County, Calif.

And another note from Ralph, this one dated June 11, states that, "**Don Fraser** of our class, Course X, who has been with the Gulf Research and Development Company in their marketing and technical division for years, dropped in to see me on Thursday, June 10, as he and his wife, Martha, had come to Cambridge to witness the graduation of their son, Malcolm Douglas, with his Doctor of Science degree in Chemical Engineering. Malcolm had previously received his Bachelor's and Master's degrees with the class of 1960. Don's other children are Don Junior, a Bucknell graduate, and a daughter, Suzanne, now in high school. Don expressed real anticipation of our fortieth reunion and expects to attend with his wife and as many of the family as can attend."

A clipping from the Lansing State Journal, dated June 4, notes that **Elisha Gray, II**, Chairman of the Board of Whirlpool Corporation of Benton Harbor, was awarded a Doctor of Laws degree by Michigan State University at the spring commencement exercises. The clipping states that Bud has been a long-time supporter of higher education, was instrumental in Whirlpool's financial support of the Owen Graduate Center at MSU. He was named Vice-president of the Whirlpool company in 1940, a Director in 1943, Executive Vice-president in 1944, and President in 1949. He has been board chairman since 1962.

A note from **John Russell**, Course VI, says, "I have decided to go back to academic life as dean of engineering at Clarkson College of Technology, Potsdam, N.Y., starting in September. This keeps me near good boating territory, namely Lake Ontario and the St. Lawrence River (Thousand Islands). I bought a new boat, First Lady II, a Rhodes Reliant built in Hong Kong. It's a yawl, 41 feet long, and can be used for long and deep water cruises with six aboard. I am selling my 35-foot Lion class sloop, all teak, also built in Hong Kong. I was with G.E. at the Electronics Lab, Syracuse, N.Y., for 11 years. Was general manager of the Lab (director) for seven and a half years. It was fun and good experience most of the time, but real hectic at others."

Another clip from the South Bergen News of Rutherford, N.J., tells us that **Newton Foster** of 15 East Pierrepont Ave., Rutherford, was presented with the Outstanding Alumnus Award for the year at the spring meeting of the M.I.T. Club of Northern New Jersey. Jim Killian was principal speaker at this dinner meeting, held in observance of the thirtieth anniversary of the founding of the club. Newton, a past president and a charter member of the group, was given an inscribed silver bowl.

It is with greatest regret that we report the death of **Samuel B. Smith**, Course VI, in the middle of July. He had been chief consulting engineer for Ebasco Services, Inc., in New York City. He lived at 275

Central Park West, where he died of an apparent heart attack. He had been with Ebasco since 1937, and leaves his wife Florence.—**Hermon S. Swartz**, Construction Publishing Co., Inc., 27 Muzzey St., Lexington, Mass. 02173.

'29

In the July issue we promised to report further on the resumes we received from classmates living in New York State, and we have the following news about this group. **Emmette Izard**, Kenmore, with five children and nine grandchildren, has been with E. I. DuPont deNemours & Co. ever since leaving M.I.T. with his doctor's degree in 1929; he was an instructor there for three years. He is now Research Fellow at DuPont, and has a long list of publications and patents, U.S. and foreign, to his credit. . . . **Phil Sayles** of Scarsdale, active in M.I.T. and various community fund drives, and in hobbies including piano playing (popular), has been with General Electric since 1927 and is now consultant, Marketing Personnel. He says he had been "primarily in Marketing across a broad range of technical products until 1956 when I became involved in the 'people' business . . . an in-company 'executive recruiter' in Marketing . . . We are continually gathering resume and appraisal information; checking and cross-checking information before deciding. I can assure you that the evaluation and prediction of performance of people is not an exact science—and I hope it never will be!" . . . **Rolf Zurwelle** of Port Washington, when we heard from him, was executive vice-president of Radiant Systems, Inc., but because of the impending sale of the company was to be in the market for a new position. He is a Professional Engineer in the State of New York and has done research in gravitation and other developments; during WWII in the Air Force his major activity was full responsibility of the first jet engine production in the U.S.A. at G.E. He reports that **L. O. Luey**, Secretary and Treasurer of Southern Gas Company, has been transferred from Birmingham, Ala., to the New York office, reporting to the President. . . . **Richard Coveney**, New York City, has travelled extensively both for Arthur D. Little, Inc., and for pleasure "with concentration in the Caribbean and particularly St. Croix." He is now vice-president, New York, with Arthur D. Little. Prior to Little days, he did sales engineering and research supervising and directing. Along with fishing, photography, and sailing, he finds time for memberships in such associations as the Newcomen Society, NICB, New York Academy of Sciences, Pan American Society. . . . **Arthur Williams** of West Islip is assistant engineer at Consolidated Edison Company of New York. Arthur, you overlooked the second page of the questionnaire! . . . **William Bowie** of Slingerlands has been with the New York Telephone Company, except for three years at Bell Labs, since M.I.T. days. He

has had various assignments in engineering, plant, and staff, now in Account Manager-Government. He and his wife Sally have a wonderful time travelling: U.S.A., Canada, Europe, Mexico. He finds life "full of rewards in many little ways if one gives a little extra all the time." He is also executive vice-president of the Albany Symphony Orchestra. . . . Also with New York Telephone Company, as plant supervisor, is **Laurence Moses** of Delmar. He celebrates with anniversary luncheon his 35th year with the company, including credit for Signal Corps activity in Newfoundland in WWII. He reports "health fine and life a happy one" with wife Katherine, two successful sons, and a daughter "a post-war addition and a blessing to keep us young a few years more." . . . **Dexter Osgood** of Malverne (about whom Laurence Moses inquired) also has Signal Corps and telephone company history; in the former his travels included Europe and Alaska and he became a Lieutenant Colonel. Now an engineer with American Telephone and Telegraph Company, he has been with AT&T since M.I.T. graduation, some of the time at Bell Labs. His most recent assignment was to the Bell System DDD Service Improvement Committee. . . . **Charles Sampson**, Rochester, is in Purchasing and Engineering at Tallman Tool & Machine Corporation. He is a fisherman, a hunter, and a bowler, and reports "much happiness with my family and hope to continue for another 32 years of married life"—wife Sigrid, grown children Sigrid and Charles. . . . **Rodolphus Swan**, Seneca Falls, another fisherman, also has two grown children, Robert and Ellen—wife Rhoda—has been with the same employer for all of the 35 years. He is manager of Process and Product Engineering at Sylvania Electric Products, Electron Tube Division, Picture Tube Operations. . . . **Gordon Williams** of Scarsdale, listed in Who's Who, was on the M.I.T. Faculty for seven years lecturing in Civil Engineering, and also part-time at Columbia University. He says his is the "usual history of a roving civil engineer . . . with Federal engineering agencies. . . ." He is now Associate and Hydraulic Engineer with Tippets-Abbett-McCarthy, a large consulting organization. Gordon has lived and worked in various countries of South America, Europe, the Middle East and the Far East. He adds "don't expect to retire in the near future and in my work it is not necessary to retire." . . . **Tom Speller** lives in Buffalo, where he is associated with General Electro-Mechanical Corporation. Last October (1964) we had a nice note from him in which he describes a trip through France and Spain covering about 2,000 miles by car with his family. I believe that in France in the days of Blériot and his airplane, the operator was known as an "aviateur intrépide." Tom and his wife are "automobilists intrépides."—I understand they drive at the height of the season just anywhere and look for overnight accommodations when and where they stop, with never (well, at least hardly ever) a misadventure. . . . **Nicholas Alexander** is dean of Holy Trinity Orthodox Seminary at Jordanville,

N.Y., and also associate fellow of the Institute of Aeronautical Sciences. His life story is the building of Eastern Orthodox Churches: St. Nicholas Russian Orthodox Church in Strafford, Conn.; Holy Trinity Monastery Cathedral, Jordanville; and Holy Trinity Orthodox Seminary at Jordanville; also the creation of an Aeronautical Engineering Department at the University of Rhode Island . . . Dan Wicker of Loudonville, with a Ph.D. from the Institute of Paper Chemistry, is vice-president, Research and Development, Huyck Felt Company. Dan has had an interesting career as Technical Director at Thilmany Pulp and Paper Company, Associate Professor of Chemical Engineering at North Carolina State; Staple Process Manager at American Viscose and Group Leader, Synthetic Fibers, at American Cyanamid. Over the years we have also seen him from time to time on business. How is everything going with you, Dan? . . . The drive is on for our 40-year Class gift, with Frank Mead as Class Agent and Bill Bowie as 40th Reunion Gift Chairman. I am sure they are looking forward to support from all of us. . . . Reporting for the December issue reminds us that the holidays will be in full swing when you get this copy, so my best wishes to all for the holiday season. Think of your Secretary this Yuletide and send him a gift of yourself—or the next best thing—notes and news of you and yours—all for the good of the Class Notes.—John P. Rich, Secretary, P.O. Box 503, Nashua, N.H. 03060.

derly items is the announcement that Dr. Norman H. (Skeets) Dolloff has been appointed head of the Geology Department at San Jose State College. After leaving M.I.T., Norm received an M.A. in geology from Columbia and a Ph.D. in metallurgy from Stanford. He has been teaching at S.J.S. since 1946. He lives in Saratoga, Calif., where he is active in local public school affairs. . . . Charles Twelves has been elected chairman of the Seattle section of I.E.E.E. for 1965-66. Chuck is assistant vice-president in charge of engineering of Pacific Northwest Bell. . . . Sidney Kaye has been elected to the Board of Trustees of the Brookline Public Library. . . . Myron Smith has been appointed Sales Vice-president of General Radio Company in West Concord, Mass. He has worked for General Radio since receiving his S.M. from M.I.T. in 1931. He is a Senior Member of I.E.E.E., a Fellow of the Radio Club of America and a member of the Executive Committee of the Industrial Instrument Section of the Scientific Apparatus Makers' Association.

Notices have been received concerning the deaths of Joseph Goodwin on April 27, Bob Henderson on May 22, Elmore Eggleston on June 13, Ferd Rousseve on July 18, Charlotte Winnemore on July 29 and Myron Ridlon on August 31. . . . Joe Goodwin lived in Clinton, Mass. and practiced architecture in Boston. . . . Bob Henderson was vice-president of Western Operations for Climax Molybdenum Company at Golden, Colo. He was a former president of the Colorado Mining Association, Chairman of the National Resources Council and Director of the Colorado State Chamber of Commerce. He was a "guiding force" in building St. Vincent's Hospital in Leadville. His brother Douglas is U.S. Ambassador to Bolivia. . . . Ferd Rousseve was Chairman of the Fine Arts Department at Boston College and a practicing architect. After leaving M.I.T. he received a master's degree in history of art from University of Chicago and a doctorate in architecture from Harvard. He was a past president and director of the Urban League of Greater Boston and a member of the Cambridge Planning Board. . . . Myron Ridlon was District Superintendent of Distribution for the Lowell Electric Light Corp.—Gordon K. Lister, Secretary, 530 Fifth Avenue, New York 36, N.Y.

for Quality Control. Robert is a founding member of ASQC and his activities include being editor of the Supervisor's Circle of "Industrial Quality Control" and author of many magazine articles.

. . . C. George Root has been appointed chief of the Desalination Department of the Kuljian Corporation of Philadelphia, Pa. George will be responsible for the administration of all engineering projects in the field of desalination throughout the worldwide coverage of the Kuljian Corporation. His home is 547 Marietta Avenue, Swarthmore, Pa. . . . Stewart R. Fleming has been named senior construction manager and elected a vice-president of Stone and Webster Engineering Corporation. Stewart came to Stone and Webster from Ford, Bacon, and Davis, Inc., where he was vice-president and director. . . . Dr. John A. Fellows was guest speaker at the annual honors banquet of the American Society for Metals and Apha Sigma Mu, honorary metallurgical fraternity. John is national president of ASM and is assistant technical director, research and development, for Mallinckrodt Chemical Works, Uranium Division, St. Charles, Mo. . . . Professor Albert G. H. Dietz, of M.I.T., co-chaired a symposium in Boston on high speed testing designed to highlight studies of rate sensitivity of all types of materials. . . . Professor S. A. Coons, of M.I.T., was panel speaker on Graphics Course Content Development at the annual meeting in Chicago of the World Congress on Engineering Education. . . . John L. Person, a native of Attleboro, Mass., has been named Executive Vice-president of the National Rivers and Harbors Congress in Washington. John is a retired brigadier general in the U. S. Army Engineers and has served the last six years as executive consultant to the Metropolitan Sewer District in Louisville, Ky. . . . The death of Frederick J. Powers, Course 8, on September 2, 1965, in Washington, D.C., has been reported to us. According to the Malden (Mass.) News, Frederick was with the U. S. Patent Office in Washington, having served a number of years ago as a member of the Malden Police Force. . . . I still have a backlog of technical articles authored by classmates which I wish to try to abstract next month. A final personal note: the Materials Center Building has been completed, occupied, and was dedicated on October 1, 1965, as the Vannevar Bush Center for Materials Science and Engineering. These notes are being written in Miami Beach and are the last thing I intend to do for two weeks.—Elwood W. Schafer, Secretary, Room 13-2145, M.I.T.

'32

Let's plow into the news notes which have accumulated. . . . Otway W. Rash has been promoted to Vice-president of the midwest division of Carling Brewing Company. As a move to strengthen the decentralized Carling management organization, O.W. will now be responsible for marketing operations in the division while continuing to direct plant operations and public relations activities. His residence is 31 Loren Woods, Ladue, St. Louis County, Mo. . . . Paul A. Robert, who is staff director, Quality Assurance, Sperry Rand Corporation, has been elected a Vice-president of the American Society

'33

We're off and running again, folks, and the pickings are just a bit slim this time around. Only one personal letter this time, which is almost an all time low. Incidentally, some time last year Cal Mohr asked for a list of classmates in his (Chicago) area who did not receive The Review, and I found, upon seeing the list, an amazing

number of the faithful(?) who do not receive this good journal. So I have made arrangements with Fred Lehmann, Alumni Secretary, to send out a letter over my signature to all of our fellows and gals who do not receive The Review. Just think of this one: is it not horrible to write a paragraph about Joe Doakes, using information furnished by someone else, only to find that Joe does not read The Review. So, to all readers of this paper, please urge our classmates to climb aboard. I need the readers.

The notes, as mentioned, are sinking rather low, and I find it necessary to use address changes to fill up the space. Many address changes these days involve only the addition of the Zip code number, but this should be sent to the Alumni Office, and a short personal letter should go to me. This Zip code business is a natural to start gossip, and is an admirable excuse to get a letter off to the Secretary. I have changes from **Rod Chipp** and **Bill Pleasants**, whose address has changed several times in the last few months; this time Bill lives in Puerto Rico. Bill, where is Caparra Hts., San Juan? Is that across the bay, or high up in the old town? I really would like to know as San Juan is one of my favorite spots to visit. Changes also from **John (Red) Williams**, to whom I wrote a short note. I fear I will not receive a reply. **Julio Ulloa**, another course sixer, seems to have moved to Belle Glade from Fort Lauderdale, which ordinarily I would not condone, but Julio must have his reasons. Julio, my Florida address is 1079 Hillsboro Beach, A1A. Next time you are making for Fort Lauderdale via West Palm, try the shore road and drop in. This I mean for you, as well as all other classmates who are in the area. I have address changes also from **Joe Carbonell**, **Rafford Faulkner**, **William Ward**, and **Jim Dunlap**. All of these are Zip code additions except Jim, who really has moved. Let me remind you fellows and gals that the Alumni Office and I have up-to-date addresses of all classmates who have been willing to let us have them, so we are at your service. It is better to write me, however, as Fred Lehmann doesn't have to write Class Notes.

The irrepressible **Bob Winters** comes thru with another speech; this one to the Engineering Institute of Canada, at Welland, Ontario, September 23. This speech is entitled "Power; A Burgeoning World Need." Fifteen double spaced pages go on about availability of Nuclear Power all over, thermal power in Canada and all over, and the power that Bob is most interested in, water power. I cannot begin to make a resume of the speech, but I cannot help but come to the conclusion that this Labrador Country has the right potential, and that Bob and his associates are not fooling. It says here that Niagara will soon become a second rate installation. If you enjoy reading really learned treatises on Canada's economy and resources, just write Bob, whose address I have.

Now we come to the one personal letter of the month. You must first recall that I mentioned an anonymous letter in the May issue, last. It turns out that the writer was an old friend of many years,

Warren Webster, Course VI-A, apparently a philosopher of long standing. I suspect that he also goes in for the pursuit of the Horoscope. I am listed as November, Warren. In passing, I wish Warren to know that all is forgiven, so come home. He avers that I should have known who he was by certain clues, forgetting that in any class from the Institute, there are many Websters. The letter is a good one from my standpoint, as Warren sees a few classmates, and asks about others, to wit: Is **Andy Regan** still with Eastman, in Tennessee? What about **Marty Levine**? He is in upper New York State, but where? Anybody ever see **Larry Sibley**? **Everett Leander Hume**? Warren informs me that **Fran Hall** is a dean at B.U. He also sees **Russ Eddy**, but can't figure out what he does for a living. Warren recently saw **Kenneth Archibald Hesran Smith** for the first time in 20 years. He is in the service of the government, in communications. It appears that four of these VI-A fellows lived in New York City in 1932; that is, Smith lived in East Orange and Webster, **Bob Winters**, and **John Sloat** had an apartment in lower New York City. Warren goes on to some philosophical contemplation and introspection, and I must refuse to paraphrase. He plays golf often but poorly, and is quite good at duplicate bridge. Warren, I really and truly appreciate that long letter, and do hope that it won't be 32 years before you feel another one coming on.

Now for the press, and thanks to the press as a life saver for this issue. From the Army, Fort Sam Houston, we hear that the family of our own Col. **Dominic Chiminello** this year received four degrees from recognized Universities. Dominic took a Masters in Business Administration from St Mary's University; two sons received degrees from the same school, and a daughter took a nursing degree from Incarnate Word College. This is probably a record. Dominic has a B.S. from M.I.T., Electro-Chemical Engineering. Incidentally, Dominic, I had a heck of a time copying your last name. Our congratulations to all the degree team on Graham Road. . . . We have word of **Ed Gilliland**'s being one of 19 distinguished engineers elected to the National Academy of Engineering. Ed is head of the Department of Chemical Engineering at the Institute. . . . A release from Socony Mobil Oil tells us that **Vernon Bowles** has been made manager of Engineering, a brand new position with Socony. Vernon took a Masters in 1933 from the Institute. . . . **John E. Fogerty** has been appointed assistant chief metallurgist of Republic Steel, Canton-Massillon. John has been plant super of the South Plant in Massillon. John took a degree from New Bedford, Mass., Institute of Technology, before attending the Institute with our class, studying the Physical Chemistry of Steel Making. He has been with Republic since 1954. John, please thank Republic for giving me your home address. The last one we have is Providence. . . . We have a most unusual release from Yale University about the Beinecke Rare Book and Manuscript Library, recently constructed at New Haven. Aside from our general interest in all things beautiful, our specific

interest in the building is that it was designed by **Gordon Bunshaft**, 1933, Course IV. The small pamphlet describes the design features of the building, and it is indeed a rather unusual structure, with the outside walls of translucent, 1½ inch Vermont marble. It is the largest building in the world housing rare books and manuscripts. George is with Skidmore, Owings, and Merrill. The building houses, among other items, the "Gutenberg Bible," the first book printed with movable type, and Audubon's "Birds of America." It will eventually house 60,000 volumes, and thousands of manuscripts. Good for George, who must surely be proud of this fine building, and we are proud of George.

That's it, and it turns out we had more than we thought.—**Warren Henderson**, Secretary, Fort Rock Farm, Exeter, N.H.

'34

More than eight days of my vacation during the past September were spent in Harwich Port, Mass., on Cape Cod, on the beach about one-half mile from the Wychmere Harbor Club, the scene of our 30th reunion. All of you who attended will remember that delightful place. I am happy to report that the dining and lounging areas around the swimming pool have been completed, look inviting, and are waiting for our next reunion in 1969. For you living at some distance away, it is not too early to make advance plans now for the 35th.

While in the Boston area I had a pleasant visit and lunch with **William A. Baker** and his wife, Ruth. Ruth and Bill have been on the go lately and when I saw them they had only recently returned from a three-week trip to Norway, Sweden and Denmark. One of the purposes of the trip was for Bill to confer with Tre Tryckare, printers in Gothenburg, Sweden, on a new book entitled, "The Engine Powered Vessel," to be published in October, 1965. Bill is the general editor of the work, and is writing the complete text. It is a history of powered ships "from paddle-wheeler to nuclear ships," and the American edition will be published by Grosset & Dunlap. The art work content of the book is by Tre Tryckare, who will also be the European publisher.

Bill and Ruth were in Bergen, Norway, visiting nautical museums and looking particularly for old shipfinds. It was interesting to learn of excavations in Bergen where cities of the past, back to about the year 1170, are being uncovered. Great fires have wiped out portions of the city several times. After each catastrophe, the rubble would be leveled and covered, and new buildings and docks would be built. Old docks, ship hulls and building foundations are now being found. Bill has pictures showing parts belonging to medieval cargo ships of about the year 1200. In addition, furled sails have been found, looking like wads of mud, which are painstakingly being opened and preserved. The original weave and yarn are still in evidence. In Stockholm, Sweden, Bill and Ruth were privileged to be aboard a diver's barge in the harbor

which was working on the recovery of the warship "Wasa." This was a large sailing warship built in 1628 which sank in the harbor on its maiden voyage because of top-heaviness. While on the barge, a carved section of a rail, about 15 ft. long, was brought up. It was so well preserved after 337 years that traces of the original gilding were still evident. All of the recovered pieces and parts are being preserved, and eventually the "Wasa" will be reassembled as much as possible in a museum. Near Copenhagen, Denmark, in the Roskilde Fjord, pieces of five different ships of about the year 1000 are also gradually being recovered, which Bill saw in a conservation plant. These, also, will be preserved, assembled, and eventually shown to the public in museums.

By now you may have guessed that Bill and Ruth have a love for old ships. You may remember that he is the designer and supervised the construction of Mayflower II, and is also the author of "The New Mayflower—Her Design and Construction." He has also authored "Colonial Vessels" and will publish a new book early in 1966 tentatively titled, "Sloops and Shallops." In addition to being curator of The Francis Russell Hart Nautical Museum at M.I.T., Bill is also engaged at present in writing the official history of the Boston Marine Society, founded in 1742. This is a mutual benefit society and association of ship captains. Good luck to you in your endeavors, Bill.

I had a pleasant surprise when I received a letter from **Henry N. Andrews** upon my return from the east. Ernie is another of our classmates "on the go." For several years he headed the Botany Department at Washington University in St. Louis, but left that post in June 1964. From August, 1964 to January, 1965, Ernie was in Stockholm, Sweden, working in the Natural History Museum on an NSF Senior Post-doctoral fellowship. Last January Ernie joined the staff at the University of Connecticut in Storrs as head of the Botany Department and is very happy in his new environment.

During undergraduate days Ernie and I did a lot of hiking in the White Mountains of New Hampshire. Although my mountain climbing days are over, Ernie is still at it, and says he enjoyed the Himalayan foothills when he was teaching in India in 1960-1961. He also told me the following: "My chief reason for the Stockholm trip was to study Arctic fossil plant collections there. I spent parts of the 1962 and 1963 seasons on Ellesmere Island in the Canadian Arctic searching for fossil plants. Rather good results and I hope to get to Greenland next summer. Other research activities include studies of early land plants which we are digging out of Devonian age rocks in West Virginia and northern Maine. If you ever run out of reading material of a type that will put you to sleep at night, let me know and I will send along some of my books and papers."

Earlier this year **Julian A. Dorr** had an operation that I recently learned about. I am glad to report that Jay is now feeling fine again. . . . **George E. Westefeld** recently returned from an Anaconda American Brass Company assignment in Bra-

zil, where Westy assisted in setting up a brass mill near Rio de Janeiro. . . . **John R. Newell** has received another honorary degree, this the honorary doctor of laws, from Nasson College in Springvale, Maine. Johnny is vice-chairman of the board of the Bath Iron Works Corporation and is extremely active in many industrial, civic, church and governmental affairs. . . . **Walter F. McCutcheon** joined the Koppers Company, Inc., after graduation in 1934. During the following 31 years Slats has held numerous positions within the company and has moved between several locations. In July Slats was elected Assistant Treasurer and is now headquartered in Pittsburgh, Pa. Our best to you, Slats.

The Coca-Cola Company has announced that **Ernest E. Lockhart** has been appointed assistant director of Technical Research and Development. Lock will assume responsibilities in several areas including the development of resources for technical guidance in the field of nutrition; liaison with food science and related departments in educational institutions and governmental laboratories; and working with appropriate Federal Agencies in food technology. I did not know that all that went into a bottle of Coke. Lock was formerly scientific director of the Coffee Brewing Institute and has most recently been a consultant to the food industry. His offices will be at The Coca-Cola Company headquarters in Atlanta, Ga.

By the time these notes are read the Christmas season will be upon us. Happy holidays to all.—**W. Olmstead Wright**, Secretary, 1003 Howard Street, Wheaton, Ill. Other Secretaries: **Charles M. Parker**, 3 William Street, Norwalk, Conn.; **Norman B. Krim**, 15 Fox Lane, Newton Center, Mass.; **Kendrick H. Lippitt**, 3782 Putter Drive, Chula Vista, Calif.

'35

Jack Colby wrote that he is now a Florida resident at Islamorada in the Keys. His son Richard graduated from Yale in June and will serve in the Peace Corps in Nigeria for two years, and then hopes to make a career in the State Department. Jack works part time as a consultant. . . . **Bissell Alderman** tells of our "famous tennis player classmate **Les Fitzgibbon**. He and his son played wonderful tennis at Longwood in the National Father-Son Grass Court Matches. I have seen a lot of tennis at Longwood and Newport since the 30's, and enjoyed it, but I don't recall enjoying watching tennis any more than when Les and his son beat Charles Pasarell and his father 7-9, 11-9, 19-17." . . . **Jack Ballard** has sold his business interest and plans to do consulting work on a part-time basis. . . . **Ham Dow** and **Bob Anderson** are finalists in the Fifth Annual Class Golf Tournament. The match is being played October 30 at the Wellesley Country Club with **Bob Forster** acting as referee. The winner will be announced next month along with the name of the Consolation Flight winner. . . . The Heat Sink Division of Astro

Dynamics, Inc., will operate henceforth under the name of Astrodyne, Inc., as a subsidiary of Roanwell Corporation, and **Allan Mowatt** will join Astrodyne, Inc., as vice president and general manager. Mowatt formerly headed the Atlee Corporation.

In order to make these notes interesting and meaningful to all of us it is necessary to receive a constant flow of newsworthy material. We shall be most grateful to any member of the Class of 1935 who will write to tell us of his activities and those of other members of the class with whom he has been in contact.—**Irving S. Banquer**, Co-secretary, 20 Gordon Road, Waban, Mass. 02168; Regional Secretaries: **Arthur C. Marquardt, Jr.**, 178 Mt. Vernon St., Dedham, Mass. 02026; **John H. Colby**, 118 Road "O," Nashotah, Wis. 53058; **Edward Loewenstein**, 444 Cornwallis Drive, Greensboro, N.C. 27408.

'36

I regret to have to start by reporting on the deaths of two members of our class. **Charles Crede**, a graduate member, died on December 29, 1964. He was on the faculty at the California Institute of Technology. . . . Also in California, **Dean Piper** died after a long illness on August 12. He was an account executive for the Western Sierra Lumber Company of San Jose. Surviving are his wife and three daughters. . . . On the brighter side: **Louis Wetmore** was featured as a "Man in the News" in the Chicago American. He is quoted as saying that he would not have accepted the position of Deputy Commissioner for Planning and Development for the city of Chicago if he hadn't thought "the job had promise." Our best wishes go to him for a bigger and handsomer city. . . . **Norm Copeland** has been appointed an assistant chief engineer of the DuPont Company effective September 1. He has been with DuPont since 1937 and holds a Ph.D. from the University of Delaware. . . . **Philip Vincent** has been named Vice-president, Field Engineering, of Sperry Rand's UNIVAC Division. He has served as FED national manager since 1960 and lives in Mt. Kemble Lake, N.J. I wish I could print the handsome picture which accompanied the news release. . . . The changes of address continue: **Clarence Horton** is in Wilton, Conn. 06897 at 28 Bittersweet Trail; **Paul Morgan** wishes his mail addressed to Pacific Pump, Inc., 122 East 42nd St., N.Y.C. 10017; **Harold Nutt**'s home address is 2 Chase Road, Annapolis, Md. 21401; **Robert Sawyer** is at 9545 14th Ave. N.W., Seattle, Wash. 98107; **Bill Saylor** has removed from West Concord to Main Street, Brewster, Mass. 02631; **John Sharp** would like to receive his mail at R.D. #1, Box 196, West Hurley, N.Y. 12491; **Edson Snow**'s home is at 139 Edgeview Lane, Rochester, N.Y. 14618 (do you suppose it really has a view?); **Ed Targonski** is at 1007 Shellbark, Muncie, Ind. 47804; **Stanley Stoltz** has moved from New Rochelle to Bedford, N.Y. 10506 (Pine Brook Road);

Frederick Story, RFD #2, Box 178, Cochranville, Pa. 19330; **John Viola** is at 50 Crystal Hill Terrace, Westwood, Mass. 02090; **True Waltz** has moved into Apt. 11B, 202 Central Street, still in Stoneham, Mass. 02180; and **Webster Wilson** has moved from Locust Valley to 130 East 67th St., New York 10021. . . . George and I oscillate between Winchester and West Hartland, Conn. and are enjoying our new-found childless freedom. After 25 years of bringing up a family it really is a change and just think, I don't have to share my car with anyone!!!—**Alice H. Kimball**, Secretary, 20 Everett Avenue, Winchester, Mass. 01890.

'37

Dick Surbeck has recently been appointed general manager of the International Division of Fairchild Camera and Instrument Corporation. Surbeck, who has more than 20 years of international business experience, joined Fairchild's Space and Defense Systems Division in 1960 as executive assistant to the general manager and in 1962 was named director, international marketing, for that division. He previously served in an executive capacity with the Itek Corporation. From 1951 to 1954 Surbeck was chief of Intelligence Plans and Policies Division, Headquarters, U.S. Air Forces, in Europe. During World War II, he served in the U.S. Army Air Force as an intelligence and plans officer. He holds the rank of Colonel in the Air Force Reserve. . . . **John K. Jacobs** is a chemical engineer with Stone and Webster Engineering Corporation, Boston, in charge of process design for petrochemical plants. John has had 20 years experience in the process industry alternating research and development with process design and economic studies. Before assuming his present position, he worked with the United Engineers in Philadelphia. He is a registered engineer in Pennsylvania.

Bill Bergen has recently been elected a director of the Martin-Marietta Corporation. Bill joined Martin-Marietta in 1937 as a vibration engineer. He became Vice-president in 1951 and President of the Martin Company in 1959. His work at the company has been mainly research. In 1943, the Lawrence Sperry Award of the Institute of Aeronautical Sciences was awarded Bill for engineering studies. He is a director of the Maryland National Bank and the Black and Decker Manufacturing Company. . . . **Duane O. Wood**, President of Lockheed Aircraft Service Company, Ontario, Calif., has recently been elected Vice-president of the National Aerospace Services Association (NASSA).

Our class President, **Phil Peters**, is Chairman of the 1965-66 Alumni Fund Campaign for M.I.T. An extra effort should be made by all of our class this year to contribute to the Alumni Fund. We should be able to raise our participation to nearly 100%.

Henry Blackstone is president of the Servo Corporation of America, trustee

and member of the finance committee of Adelphi University, Senior Member of IEEE, and a member of the Committee on Foreign Trade of the Railway Progress Institute. . . . **Michael Zinchuk** is consulting engineer at the Barkley and Dexter Laboratories, Fitchburg, Mass. . . . **P. William Bakarlan** is managing director of P. William Bakarian and Associates, Inc., New York, N.Y., president of Minerals and Metals Development Inc., New York and director of Stellar International, Inc. . . . **Donald E. Kerr** is a professor of Physics at John Hopkins University. . . . **Joe Puffer** has recently returned from two weeks in the Hawaiian Islands, which was the last of the 50 states for Joe and his wife to visit, plus Canada, Mexico and Bermuda. . . . **Henry H. Guerke** writes that his son, Henry Guerke, Jr., graduated from Villanova last June. His daughter Jane graduated from Regis College in 1962 and his daughter, Carol, is now a sophomore at Regis.

A Merry Christmas to you all, and as a New Year starts, remember our 30th Reunion on Cape Cod at the Oyster Harbors Club in June 1967.—**Robert H. Thorson**, Secretary, 506 Riverside Ave., Medford, Mass.; **Professor Curtis Powell**, Assistant Secretary, Room 5-325, M.I.T. Cambridge, Mass.; **Jerome Salny**, Assistant Secretary, Egbert Hill, Morristown, N.J.

'39

Eagle-eyed **Seymour Sheinkopf** forwarded this tidbit which some of you may have seen in Time Magazine in the August 27 feature article on Chris Kraft and the NASA space flight activities. In the biographical section of the article, it reads that in 1944 after graduating from VPI, Kraft "went to work as a flight research engineer at Langley. Working under Division Boss **William Hewitt Phillips**, whom Kraft credits as the man most responsible for his development as an aeronautical engineer and flight-test director, his first project was to help build a quarter-scale model of the X-1 to be dropped from a B-29 at 35,000 ft. to determine its ability to withstand the stresses of breaking the sound barrier." Now, there's a facet of Hew Phillips' background that he didn't tell us about at Reunion two years ago! Congratulations! (And thank you, Seymour, for that timely clipping regarding the nation's space effort.)

A clipping from the Tire and TBA Review is entitled "Emerson of Gates". It contains an interview with **Bascom C. Emerson**, XV, sales manager of Gates Rubber Company, Denver. The article begins with an excellent photo of serious-looking Buz, expounding on problems of the tire industry.

G. Arthur Morrell Jr., XV, wrote that in June 1964 he moved into the New York area. He is at Dyna-Empire, Inc., Garden City, Long Island, involved in the design of high-fidelity audio equipment. Previously he was with Astatic Corporation, in Conneaut, Ohio. The Morrell's daughter Marjorie is at Hillsdale College, Mich., and son Jeff is a

senior in high school. Two younger sons are coming along, too. Arthur "would like to hear from other '39-ers in the area." They live at 10 Libby Drive, Glen Cove, N.Y., 11542.

Frank Lewis Orrell, Jr., IX-A, has been appointed manager of the Los Angeles facilities of Magnaflux Corporation's Materials Testing Laboratories. In this new position, he directs materials development, materials applications, process improvement, and laboratory and field testing. He was formerly manager of the refractory metals product group, Westinghouse Electric Corporation, Blairstown, Pa. Dr. Orrell who received his doctorate in physical metallurgy from Ohio State University, is co-author of "Advanced Metalworking Processes," a monograph in preparation under the direction of American Society of Metals for AEC.

Seymour Sheinkopf also wrote that the following '39ers were present at the Alumni Officers Conference held in September at the Institute: **Pete Bernays**, Sam Hutchins, Ernie Kaswell, Chuck Parker, Ruth Pitt, and himself.

Last minute news item: Following the October 21, 1965, public announcement of Nobel Prize Winners, your Secretary sent the following telegram to **Richard P. Feynman**, California Institute of Technology, Pasadena, Calif.: "Dear Dick: Delighted to learn today of your Nobel Prize for Physics award. Hearty congratulations from your M.I.T. 1939 classmates."—**Oswald Stewart**, Secretary, 3395 Green Meadow Circle, Bethlehem, Pa. 18017.

'40

Barry Taft has been appointed manager of Materials Engineering at the Orlando Division of Martin Company. Barry was previously chief of Materials Laboratories at Pratt and Whitney Research and Development Center at West Palm Beach, Fla. In his new position he will be in charge of development and fabrication of advanced aerospace materials. . . . **Leonardo Zeevaert** has been honored with the American Institute of Architects Allied Professions Medal. As one of Mexico's outstanding structural engineers he has designed structural systems for more than 300 buildings, including the 44-story Torre Latino Americana. Since 1941 he has been a professor of soil mechanics and foundation engineering at the University of Mexico.

Charlie Freeman has been appointed district manager of the Los Angeles office of Manufacturers Mutual Fire Insurance Company, a division of the Factory Mutual System. Charlie started with Factory Mutual upon graduation. He then served four years in the U.S. Navy; after running several hotels in the Bahamas he returned to Factory Mutual in 1961. . . . **Charlie Edwards**, who is staff assistant to the Executive Vice-president of the Bendix Corporation, has been elected Secretary of the 14,000-member Los Angeles District of the Institute of Electrical and Electronics Engineers.

To each classmate a Merry Christmas and a healthy and prosperous New Year! On your list of New Year's resolutions, put down that you will write to Al at least once during the year.—**Alvin Guttag**, Secretary, Cushman, Darby & Cushman, American Security Building, Washington 5, D.C.; Dr. **Samuel A. Goldblith**, Assistant Secretary, Department of Food Technology, M.I.T., Cambridge, Mass.

'41

George N. Emmanuel recently celebrated 20 years of service with The Babcock and Wilcox Company. He joined B & W at its New York offices in 1953 as a staff engineer, and was named senior metallurgist at the company's Barberton, Ohio, facilities in 1958. Author and co-author of many technical papers, Emmanuel is a member of the American Welding Society and American Society of Metals. He and his wife, the former Lois E. Harned of Cedar Rapids, Iowa, and two children live at 523 Dansell Street, Kent.

Col. **William F. Hart, Jr.**, is commander of the 35th Engineer Group of the U.S. Army located at Cam Ranh Bay, South Vietnam. His oldest daughter, Leslie, is a student at the University of Pittsburgh. His wife, another daughter, Cecilia, and twin sons, William F. III and James are living in Miami, Fla.—**Walter J. Kreske**, Secretary, 53 State Street, Boston, Mass.; **Henry Avery**, Assistant Secretary, 169 Mohawk Drive, Pittsburgh, Pa.; **Everett R. Ackerson**, Assistant Secretary, 15 Vernon Street, South Braintree, Mass.

'43

Bill Engels, President of Engels Trucking Corporation, is a new member of the Empire State Highway Transportation Association. He served as a lieutenant in the Navy until 1946 when he joined the company founded by his grandfather, Oscar Engels, in 1877 and continued by his father, William. The Engels' company has been in the local cartage field since its inception. Bill, also head of HEV Warehouse Corporation and Downtown Truck Rental Corporation, has three girls and a boy, ranging in age from four to fifteen. His hobbies are sailing and water sports. . . . **Bob Mason**, who has been sales manager of Hercules Powder Company's Kalamazoo district office for the past three and one-half years, has been named to a new post in the company's home office in Wilmington, Del. Bob's new post is sales manager, specialty paper chemicals, pine and paper chemicals department. . . . **Tom Derby** has been assigned to the International Operations of American Viscose Division, FMC Corporation. A sales coordinator for Avisco Film Operations for the past seven years, he has been appointed product manager for Avisco films. Tom joined

American Viscose Film Operations in 1948 and did food packaging research in the Market Development Department before he was named cellophane sales coordinator in 1958. Tom, his wife and three children live in Bryn Mawr, Pa. . . . **Carlton G. Lehr** of Childs Rd., Lexington, staff engineer of Smithsonian Astrophysical Observatory at Cambridge, has been elected to the Board of Corporation of Morgan Memorial, Inc. of Boston. Morgan Memorial Goodwill Industries is the largest voluntary, non-profit and non-sectarian agency in New England serving the needy and handicapped with jobs and rehabilitation. He was formerly associated with the Raytheon Company, as manager of its Microwave research group. He has been on the teaching staff of Northeastern University as a professor in mathematics for several years. He is an honorary member of the Protestant Fellowship at the Massachusetts Correctional Institution at Norfolk. During World War II, he served as a lieutenant in the U.S. Army Signal Corps as a radar officer from 1943 to 1946. He is married to the former Elizabeth Ann Durkee of Belmont, daughter of Mr. and Mrs. Melvin R. Durkee of 21 Slade St. The couple has three daughters, twins Janet and Judith, 11, and Betsy, 7. . . . **Bob Lichten** was elected President of the American Helicopter Society for 1965-1966. A director of advanced engineering for Textron's Bell Helicopter Company, he is one of the world's outstanding engineers in the field of rotary-wing aeronautics. In 1959 he received the American Helicopter Society's coveted Klemin Award for his role in development of Bell's XV-3 convertiplane and is author of many technical papers on helicopter and VTOL aircraft design. He directs preliminary design, research and development and other technical groups at Bell. He was responsible for the design of all initial development versions of the Army's famed UH-1 Iroquois Series of helicopters, now being flown in Vietnam combat. His first job was as research assistant in the M.I.T. flutter laboratory. His later experience includes work on both fixed-wing and rotary-wing aircraft for several companies. He joined Bell in 1948 and has supervised or been associated with many of its important engineering projects since then. He is a member of the American Institution of Aeronautics and Astronautics' technical committee for aircraft design, has served as treasurer of the American Helicopter Society and editor of the society's journal and as a member of the NASA committee on aircraft aerodynamics. Bob and Sue and their three children live in Dallas, where he is active in Boy Scout work and community affairs. Their oldest son is at Harvard.

Jim Spitz of Pensacola, Fla., has been promoted to the position of Group Vice-president of Tenneco Chemicals, Inc. Jim is responsible for all phases of operations of the newly-formed Chemicals and Specialties Group of Tenneco; the group includes Newport Division, Heyden Division, and Nuodex Division. The group operates ten chemical plants in the U.S., three in Mexico, one in Canada, and nine in Europe, the United Kingdom, South

Africa, and Australia. His headquarters are at the corporate office of Tenneco Chemicals, Inc., 300 E. 42nd Street, New York, N.Y. After World War II service as a naval officer, Jim joined Newport in 1946 as a chemical engineer. He became assistant chief engineer in 1956 and after assuming the positions of Assistant Vice-president, Vice-president, and Executive Vice-president successively, became President of Newport Division on January 1, 1961. He is an officer and director of Tenneco Chemicals, Inc. and of many of Tenneco's foreign subsidiaries. He is also a director of the Florida National Bank. . . . **Thomas J. Kent, Jr.**, was appointed development coordinator of San Francisco in charge of the city's planning, housing and development agencies. He was director of City Planning of San Francisco from 1946 until 1948 when he established the Department of City Planning at the University of California where he is a professor. He has served on several planning committees including the Regional Planning Subcommittee of the San Francisco Bay Area and is author of "The Urban General Plan." . . . It was encouraging to read **Jim Hoey's** Class President's letter about our 25-year gift. It will take a lot of meetings, personal visits and telephone calls between now and June, 1968, to meet the goal of \$400,000, but with the spirit which our class has shown in all these years, the committee is confident it will be met. I hope that each of you, reading these notes in early December, will review your charitable giving for the year 1965 and think of M.I.T. You do not need a special form or envelope to make your gift, simply make a check payable to M.I.T. and mail it to the Treasurer's office or to the Alumni Fund office. Be sure to include your class numerals, because we want the credit.—**Richard M. Feingold**, Secretary, Ritter and Berman, 266 Pearl Street, Hartford, Conn. 06103.

'44

In the notes for November **Paul Heilman** reported that there had been no volunteers to take over the duties of Secretary and further that there had been no response to his invitation of last July for comments concerning this column. Your present correspondent, feeling somewhat uncomfortable because he hadn't helped the Class Secretary more, attempted to seek him out at the Alumni Officers' Conference held in Cambridge last September 10-11. Paul was not there. I believe he was about ready to depart for Chile, where he is displaying the experimental Mercer Cobra Automobile on behalf of his trade group, the Copper Development Association. Instead of Paul, I was destined to meet and talk with **Burton A. Bromfield, II**, a stalwart of our class who had written the notes for about three years sometime prior to 1959, when Paul Heilman took over the job at our 15th class reunion. My purpose in seeking out Paul was to suggest a way of getting news from classmates like myself who don't

ever seem to write anything unless there is some kind of deadline approaching but who would be willing to pay for a phone call. (If this intrigues you, drop me a card which says, "What is your phone call plan?") Yes, I would be willing to help. That's why I was making my suggestion, wasn't it? Burt would call me in a week or so. About 10 days later the phone rang in my Pentagon office. It was Burt calling from Washington National Airport to discuss the class notes. A few minutes later Burt found himself on a short tour of the world's largest office building (30,000 persons), and I found myself giving way to Burt's persuasive personality. The tour included the Officers' Athletic Center where I am a non-voting civilian member. Around us there were scores of eager officers who were using their lunch hours to keep themselves physically fit in one of those places that Mark Twain called "hell on earth"—a gymnasium. Burt and I settled for a shower and a few vigorous lengths in the subterranean swimming pool. A light lunch at the grill was enough to replace the calories consumed. Then a short stroll outside the Pentagon brought us to the River Entrance where we waited a few minutes for a taxi to take Burt to his appointments in the District. During our tour we discussed the class notes. I made a mild protest that I would find myself working harder at this job and enjoying it less than would some other member of the class. Burt suggested I give it a try. The next day he advised me by letter that the file and all materials were on their way, that presidential confirmation would follow, and notes were due October 15. President **John L. Hull** is now back from a trip to Europe. He writes that he is caught somewhat by surprise that Paul Heilman has to give up the job, that he has not searched for other candidates but that with Burt's recommendation and my alleged willingness to undertake the job he would like to have me carry on. There were only a few days remaining. If there were going to be notes in the December Review it looked as if I would be writing them. There seemed to be one other logical course of events: the class president himself might feel that he should write the notes for at least this one issue. No, said John. You seem to have everything under control. Carry on. Well, let's see what the file holds. There are messages from six who used the space provided on the large flap of the Alumni Fund contribution envelope. Wedding bells should get priority. **John T. Cooper**, I, 413 Penwyn Road, Wynnewood, Pa., reports, "I married Marjory R. DeWitt of Bethlehem, Pa., in January 1964. I am now residing in Wynnewood and working in Philadelphia for the Pennsylvania Railroad as system industrial engineer—Communications." Congratulations, John, and best wishes, Marjory. Your second wedding anniversary will be almost at hand when you get this, so best wishes on that occasion. . . . From the other end of the country **Harry S. Myers, Jr.**, XVI, 19740 East Cameron Street, Covina, Calif., sends news of his family. He writes, "Our second son, Kent Boden, celebrated his first birthday on Alumni Day, June 14. Our other son,

Harry, III, has us all very much involved in Cub Scouts and Little League." June 14 rings a bell with me, Harry, a wedding bell. On that day in 1952 I married Camilla (China) Bolitho Ryall in New York City. Rev. **Roland Benjamin, Jr.**, XV, 211 Watchung Avenue, Montclair, N.J., writes, "I am now non-parochial (not assigned to any parish) practicing my ministry as supply priest on Sundays while working full time during the week for J.C. Penney Company in New York City." Roland was ordained as a priest on December 21, 1961 in Trenton, N.J. according to notes in this column of February 1962. . . . **Russell H. Hedgecock**, Capt., USN Ret., S.M. in XIII-A, reports that he recently accepted the position of superintendent of Oceans Engineering with the Ocean Drilling and Exploration Company, 2475 Canal St., New Orleans, La. His new assignment will include "extension of the company's expertise in the field of stabilized off-shore floating oil drilling rigs to other industries of the sea." He was formerly vice-president and general manager of Converter Corporation, an affiliate of United Shoe Machinery Corp. . . . **Albert P. Brogle, Jr.**, VI-A, records that he worked from 1949-1960 as a "civil servant" at Fort Monmouth, N.J. For the last five years he has been with RCA. Currently he is manager of Advanced Communications System Engineering in Camden, N.J. He has four children. The oldest of them (a daughter) is now at Cornell. . . . **Gabriel E. de Roeth**, X, East 2424-35th Ave., Spokane, Wash. 99203, has several items of news and an invitation. His note, postmarked last May says, "We moved into a new house in the fall of 1964. Now we are adding about 3600 square feet to our plant (Western Plastic, Inc.)." He also said when he wrote, "I hope to have my sailboat in the water this summer (1965). I would be glad to take any classmates sailing on beautiful Lake Coeur d'Alene." My encyclopaedia says the lake with that romantic name is located east of Spokane in Idaho. It is 30 miles long and two to four miles wide at the upper reaches of the Spokane River. Our class notes of last March report that Gabriel represented the Institute at the inauguration ceremonies of the thirteenth president of Whitworth College and he is active as an Educational Councillor. . . . In addition to the six notes reported above, we have a clipping telling of the activities of one of our most distinguished classmates, **Sanborn C. Brown**, VIII, who received his doctorate with our class. You will recognize him as Professor of Physics and Associate Dean of the Graduate School at the Institute. Last January Professor Brown presented a paper at Chicago's Meadville Theological School on "Breakthrough in Religion." A shortened version of that paper appeared in the June issue of the Unitarian-Universalist Register Leader. Dean Brown proposes that some of science's basic methods could be applied profitably in the fields of theology and human affairs. . . . From the 20 address changes furnished by the alumni office I reached Dr. **John A. Rockett**, XIII, by telephone at his new home address which is 4500-47th St., N.W., Washington, D.C.

From naval architecture John has evolved to physics. He comes to Washington to fill the post of Director of Basic Research for the Factory Mutual Engineering Corporation, an affiliate of Factory Mutual Systems. John says this group of insurance companies is again concentrating on basic research after a lapse of several decades. The research program, which is being conducted jointly with the U.S. Bureau of Standards, centers around the investigation of destructive fires in enclosures. John previously lived in Manchester, Conn., and worked for Pratt and Whitney Aircraft where his title was chief of Fuel Cell Technology. John received his doctorate in physics from Harvard in 1958. His dissertation was on "Rotating Stall in Axial Compressors" with the research sponsored, not surprisingly, by Pratt and Whitney. John says he was an intellectual hobo for a number of years. He earned his master's degree at Brown University. He then travelled in Europe gathering credits while there toward his doctorate. John says he now visits the Institute about once a month, and he is very interested in what is going on in the academic departments. He contributes to the Alumni Fund but says that, at his request, he is not on the mailing list for the Review. It seems that this magazine has not yet successfully competed with the research papers he needs to satisfy his intellectual appetite. . . . That's it for this month. After writing these notes I feel more strongly than before that we owe **Paul Heilman** an expression of appreciation for the wonderful job he has done over the past six years with this column. His address is still 3 Ellery Lane, Westport, Connecticut, but you can use this column to make known your sentiments on this or any matter which seems appropriate. Until I talk with Paul Heilman I am going to sign—**Paul M. Robinson, Jr.**, Acting Secretary, 7710 Jansen Drive, Springfield, Va., 22150, Tel. 703-451-8580.

'45

Jim Hoaglund was recently promoted to product-line marketing manager of ITT Bell and Gossett Hydronics. You will recall that Jim joined B & G as a factory representative in 1951 and was appointed general manager of the company's air conditioning and refrigeration division in 1963. **Arnold G. Gangnes** represented the Institute at the inauguration at Western Washington State College last February. **Steve Wellington** of West Newton is in the Systems Research Department of the First National Bank of Boston. In March, **Tom McNamara** was named the first Director of Education at Honeywell Electronic Data Processing Company in Wellesley Hills. You will recall that Tom had earned his spurs while teaching data processing courses at Northeastern at night for the past eight years. The July issue of Automotive News contained a feature article on **Dave Cohen's Cohen Auto Company, Inc.** of Glen Cove, Long Island's oldest Chrysler dealership.

Hal Thorkilsen after 19 years with Colgate-Palmolive becomes Divisional Manager for Consumer Products—Philip Morris Company on October 1st. Hal will be in charge of the American Safety Razor and Burma-Vita product lines. **Bob Maglathlin** has fulfilled his obligation as President of the Laboratory for Electronics and has joined Sylvania Electronics in Waltham as manager, Advanced Systems & Techniques Laboratory. When I saw Bob last weekend he reported that **Dave Flood** had just joined Sylvania Electronics as well. In May, Prexy **Tom Hewson** was appointed an alumni member of the Visiting Committee for Mechanical Engineering.—**C. H. Springer**, Secretary, c/o Firemen's Mutual Insurance Company, 420 Lexington Avenue, New York, N.Y. 10017.

'46

Harry A. Augenblick writes to inform us of his marriage, last January, to Barbara Beach Kirby, of Bedminster, N.J. After a honeymoon cruise in the Caribbean the Augenblicks returned to their home at 377 S. Harrison St., East Orange, N.J. Harry is president of Microlab, Livingston, N.J., a firm which purchased Bogart Manufacturing Corporation in 1963 and FXR Inc. in 1964. All these businesses are engaged in the manufacture of microwave components and test equipment. . . . The **Roy L. Kleins** recently moved from Texas to their new home at 12645 Farmdon Ave., Chino, Calif. 91710. Roy is a principal project engineer with the Fluor Corporation of Los Angeles. . . . **John and Peggy Voneiff** had a daughter arrive last May, making the total 3 girls and a boy. They all live at 5513 Charlote Rd., Bethesda, Md. . . . **Dr. Leonard Hendleman** is assistant chief, Department of Obstetrics and Gynecology at the Kaiser Foundation Hospital at Santa Clara, Calif. The Hendlemans live at 1125 Hamilton Ave., Palo Alto, Calif. . . . **Kenneth J. Hauser** resigned from the Navy in October 1946 and joined the Air Force. One of his most interesting tours of duty was on the G.E. Nimbus weather satellite project as a meteorologist, spending 11 months near Fairbanks, Alaska. He retired from the Air Force as a Major in 1960, and now Ken, Audrey, two sons and a daughter live in S. Whitley, Ind., Box 228. . . . A year ago May **Dr. Robert A. Summers** married Sherma Nancy Spires of Portland, Maine, and a month later he joined NASA headquarters as Chief, Long Range Planning, Advance Manned Missions. The Summers live at 1001 Third St. S.W., Washington, D.C. 20024.

The promotion of **Henry E. Cradduck** to superintendent, manufacturing and development engineering at the Merrimack Valley Works has recently been announced by the Western Electric Company. Henry joined the company in 1946 as a development engineer at the Merrimack Valley Works. He worked on a variety of projects at that location until 1953 when he was assigned to the engineering

results coordination organization at the Kearny, N.J., Works. He was promoted to department chief, staff engineer, and to assistant superintendent. In 1961 he was promoted to superintendent of manufacturing engineering in N.Y. He has most recently held the position of superintendent, transmission apparatus shops, at the Merrimack Valley Works. The Cradducks have three sons and live at 36 Lincoln Circle, Andover, Mass. . . . **Shepard M. Arkin** has recently been appointed assistant director of government marketing programs for the Raytheon Company. The Arkins live at 25 Whipple Rd., Lexington, Mass.

We are sorry to report the passing of **William Russell Lindsay** on August 16, 1965. He had undergone an operation for a malignant brain tumor last February. After two years of sea duty in the Navy, Bill worked in various management positions in woolen mills in South Carolina. He changed to the printing industry in 1955, first in Williamstown, Mass., and then moving to Louisville, Ky., in 1957. His most recent position was production manager of The Louisville Times and The Courier-Journal. Bill leaves his wife, Teresa, five daughters and a son.

Melvin L. Chrisman has been promoted from assistant cashier to assistant vice-president of the Riggs National Bank, Washington, D.C. . . . **Daniel I. Cooper** has been appointed publisher of International Science and Technology, a Conover-Mast magazine. After receiving his B.S. with the rest of us Dan went on to get his Ph.D. in Physics from M.I.T. in 1952. He was a member of the technical staff at Bell Labs from 1952 until 1954. He joined Nucleonics magazine, serving as Managing Editor for seven years. He has been executive editor of this magazine since 1962. Dan, Bette, two boys and a daughter live at 48 Harding Drive, South Orange, N.J. . . . **Ford Park** is also associated with International Science and Technology, having recently been promoted to the position of Senior Editor. Ford has a B.S. and M.S. in Mechanical Engineering from M.I.T. He worked for five years on cryogenic transport equipment for Linde Company Division of Union Carbide, and was on the staff of Product Engineering Magazine before joining I.S. and T.

Merry Christmas to you, and why not append a sentence or three about your family, your job, or other items of interest to the Christmas card you were just about to address to **John A. Maynard**, Secretary, 25 Pheasant Lane, North Oaks, St. Paul, Minn. 55110.

'48

Once again, our class was the largest group that attended the Sixth Alumni Officers Conference this past September 10 and 11. Of the more than 400 registrants, we supplied 24 or roughly 6%. As in the past, the Institute was a most gracious and generous host, and the program was well organized and efficiently carried out. Many of the talks were not only greatly interesting but highly topical as well.

We don't want to bore you, or get overly involved with statistics as the late Robert Benchley did in his little gem of a "Treasurer's Report," but there are a few items that we feel are very worthy of your interest. The student registration this fall was at an all-time high of 7300, and for the first time the graduate students accounted for nearly 50% (3600 versus 3700 undergraduates). Also, the freshmen class of 940 included 48 women. In fact, The Social Beaver, the freshmen handbook, has included M.I.T. for the first time in its renowned list of girls schools.

We also learned that there are now three major student groups on campus: undergraduates, graduates (who spend from 4 to 6 years in residence) and post-doctorals (whose stay on campus is from a few months to several years). Most of this last group hold National Science Foundation, National Institutes of Health, or Guggenheim Fellowships. In addition, foreign students (coming from 70-75 countries, excluding Canada) now comprise 6% of the undergraduates and 20% of the graduate students. Also, married students, who in 1952 represented 16% of all registered students, now account for 25% of the undergraduates and 46% of the graduate students.

Another interesting figure is that given by Professor Roland Greeley, Director of Admissions, concerning the ratio of the number that come and register as freshmen to the number offered admission. He said this ratio is 60%, which is somewhat lower than most Ivy League schools.

Those attending the conference, and the alumni activity represented, were as follows (Code: A-Educational Council, B-Alumni Fund, C-Class Officer, D-Club Officer, E-Alumni Association Officer, and F-M.I.T. Staff): **Bill Bangser** (AB), **Hal Beumer** (AB), **Martin Billett** (BE), **Ben Brettler** (BE), **Ken Brock** (F), **Em Callahan** (BCD), **Dave Cist** (AB), **John Dedrick** (BD), **Bill Hart** (A), **Frank Jones** (AB), **Harry Jones** (BC), **Ben Kessel** (D), **Harry Kilgore** (B), **Norm Kreisman** (A), **Bill Maley** (BD), **Harry Meyer** (A), **Perry Nies** (B), **Jack Page** (A), **John Reid** (ACD), **Pete Richardson** (F), **Maurice Rifkin** (B), **Jack Walch** (A), **Warren Wells** (F), and **Bob Wofsey** (BE).

In talking with **Em Callahan** at the conference, we learned that he is now with the Sperry Rand Systems Group which is currently operating out of offices of the Sperry Gyroscope Company in Great Neck, N.Y. Preferring, however, to live in New Jersey, Em commutes from his home in Ho-Ho-Kus.

Writing these notes is much easier and more enjoyable when we have personal notes, cards or letters from you than trying to sift interesting bits of news out of dry and impersonal news clippings. In one of the Institute's mailings to alumni this past summer, the flap of the return envelope had several lines marked "news for your class secretary." We are happy to report that some of our members did take the time to jot down a few notes. **Les Corrin**, who took his doctorate in chemistry with our class, wrote, "Now associate professor of chemistry at State University College, New Paltz, N.Y. Doing extensive consulting in graphic technol-

ogy, having been with Xerox until recently. Developing research and graduate and undergraduate courses in physical chemistry. Family now includes a boy entering second grade and a girl entering first. Am still commuting between New Paltz and Rochester on weekends." . . . **Johnny Dyer**, who was a VI-A man, says he is "working in the guidance and navigation areas regarding the Lunar Orbiter program at The Boeing Company." Johnny's address is 4104 93rd Street S.E., Mercer Island, Wash. . . . From **Bob Gurney**, "Five children: Martha 15, Dan 13½, David 12, Ruth 7, and Jim 6. Engineer designing beam monitoring instruments at Stanford Linear Accelerator Center. Enjoy living in University community, sailing 20-ft. Shark Catamaran for recreation, plus Sierra Club, Scouts, (and) going to school with the children again." Bob and his family are living at 403 Azalea Way, Los Altos, Calif. . . . We received, via the alumni office, a very nice and welcome letter from **Roger Sisson**, Course VI, in which he says, "I have been appointed Associate Professor of Operations Research and Industry in The Wharton School of Commerce and Finance, University of Pennsylvania. I am teaching data processing and computer simulation techniques. I also am doing some fascinating research into the problem of developing a quantitative understanding of conflict processes. We still live in the East Oak Lane Section of Philadelphia."

War tactics today are based heavily on technical operations. Thus, it is to be expected that Techmen will be represented among the senior Army officers here and abroad. Two colonels, who got their master's in electrical engineering with our class, recently received citations for outstanding work. **Gerry Cravens** received the Army Commendation Medal during ceremonies at Fort Leavenworth, Kansas, on June 7 for "meritorious service as Project Officer, U.S. Army Combat Developments Command Combined Arms Agency, Fort Leavenworth, from August 1962 to May 1965." Gerry entered the Army in 1941 and was last stationed in Germany. Before entering M.I.T., Gerry took his B.S. degree in 1939 at Texas A&M University. **Bob Kimball** received the Republic of Vietnam Army Medal from Brig. Gen. Nguyen Van Kiem, deputy chief for personnel, Joint General Staff, Republic of Vietnam Armed Forces, during ceremonies in Vietnam on August 11. The citation was "for meritorious service in contributing to the improvement of the communication systems of the Republic of Vietnam Armed Forces." Bob also entered the Army in 1941 and took his undergraduate work elsewhere before coming to Tech. He received his B.E. degree in 1939 from Johns Hopkins University and, after leaving the Institute, took his Ph.D. degree in physics in 1957 from the University of Virginia.

Among the promotions recently announced by the Faculty of Medicine at Harvard was that of **Stan Adelstein** to Assistant Professor of Anatomy. He will also continue as Phillip H. Cook Fellow in Radiology. Stan took his S.B., S.M. and Ph.D. in Course VII at Tech in 1948,

1949 and 1957, respectively. He then went on to Harvard and received his M.D. in 1959. . . . **Dick Asmus**, who took his S.M. in X-A with our class, has really been busy this past summer. In June he received his M.B.A. with distinction from Harvard's "B-School" (one of 64 men to achieve this honor out of a class of 636 men and women) and then, in August, joined Mooney Chemicals, Inc. He will be active in new products and process development and will be headquartered in the company's facilities at Franklin, Pa. Dick's business career consists of 16 years with the Standard Oil Company (Ohio) where his job titles included senior market analyst, senior technical specialist—process and product development, group engineer—process development, and senior engineer—process development. He is also the author and co-author of three U. S. patents. Dick took his undergraduate degree in industrial chemistry at Case. . . . **Ray Barnstone**, XV, S.M., has joined the Washington operations staff of Booz, Allen Applied Research Inc. in its Research and Analysis Division located at 4733 Bethesda Ave., Bethesda, Md. As a principal engineer in the firm, his responsibilities will be in the management systems field, including program planning evaluation, and control for special projects. Before joining Booz, Allen, Ray was manager of program control for Raytheon Company for five years and before that had 10 years of experience with Martin Company, Westinghouse, ACF Industries, Inc., and Laboratory for Electronics, Inc. holding engineering and administrative positions. . . . **George Biernson** recently had a paper published in the IEEE Transactions: Microwave Theory and Techniques. He has been with the Applied Research Laboratories of Sylvania Electronic Systems, Waltham, Mass., since 1956 and is now a senior engineering specialist. George has worked on radar and control systems and more recently bionics research, with particular emphasis on color vision. He designed the control system for the high-accuracy 60-foot antennas in Camp Roberts, Calif., and Ft. Dix, N. J., now being used in the Syncron satellite communication system. . . . There was a very nice article in The Boston Traveler last summer about **Izzy Candeub**, IV, MCP. It seems he is doing mighty well for himself, being president and chief planner of a nationwide, 120-man, consulting firm, Candeub, Fleissig, Adley and Associates. They are one of the leaders in planning for urban renewal and industrial development and have 13 offices throughout the U. S. . . . Another recent author is **Don Davenport**, V, PhD, who published a paper in IEEE Transactions: Aerospace. Since 1963, Don has been director of engineering with General Precision, Inc., and has been responsible for technical direction and management of research, development and design of projects in EBW, conventional and 1 amp/1 watt electroexplosive systems and devices, and analysis of systems requirements. . . . **Bob Friedman**, X, SB, has been named patent counsel at General Electric's Silicone Products Department in Waterford, N.Y. Bob, who took his law degree at Georgetown University in 1953,

has been with G.E. since graduation in 1948 and for the past six years has been patent attorney at the Waterford plant. He and his wife Francis and four children make their home at 2272 Berkley Ave., Schenectady, N.Y. . . . **Russ Gwillim** XV, SB, has been elected Executive Vice-president of Chicago Rawhide Manufacturing Corporation. Russ has been with the firm since leaving Tech and has held various positions including general sales manager, and, most recently, Vice-president—marketing. . . . **Sandy Coombs**, XV, SB, SM, was elected last spring to the post of Vice-president—manufacturing of Cabin Crafts. Sandy joined Mohawk Carpets in 1950 in Amsterdam, N.Y., moving into their industrial engineering department, and immediately started working on a location for a yarn mill site in the South. His effort helped to "locate" a tufting plant by leasing a plant in Laurinburg, N.C. . . . To most men, retirement after 20 years in the U. S. Navy would require some adjustment to civilian life. But this is not the case of **Al Kelley**, VI, SB; XVI, SCD, deputy director of the NASA Electronic Research Center in Cambridge, Mass. On June 30 last he retired as a naval commander. The very next day, July 1, he reported to the same job he has held with NASA for the past five years, but as a civilian. Al was assigned to detached duty with NASA by the Navy in 1960. He will continue to occupy the same position he has held since that time. . . . **C. E. Hall**, VII, Ph.D., was co-author of a prosaic paper entitled "Configuration of Inactive and Active Polysomes of the Developing Down Feather" which was published in the June 25, 1965, issue of Science. Then, in August, he presented a talk on electron microscopy instrumentation at the 1965 annual meeting of the Electron Microscopy Society of America in New York. . . . **John MacCallum**, a major in the Air Force, was awarded a Ph.D. degree in electrical engineering by the University of Illinois this past June. He studied under an Air Force program which assists members toward advanced degrees at civilian institutions. After receiving his S.B. in Course VI with us, John went on to take his masters at the Air Force Institute of Technology (AFIT) in 1955. He is currently a member of the faculty of AFIT, which is part of the Air University, the advanced professional military university for Air Force officers.

Among the news clippings this month was a most pleasing one about one of the coeds in our class, Mrs. **Barbara Perles**, V, SM. Receiving a teaching appointment to Bentley College in Waltham a year ago, she was recently promoted to assistant professor. Barbara, who took her undergraduate degree with honors from Boston University, was a research chemist on penicillin while studying at Tech. After graduation, she then went on to teach at BU, Wheaton and Brandeis before joining the Bentley faculty. Barbara is married to Benjamin Perles, who also is associated with Bentley College. They and their three children (Steven, Suzanne and Richard) live at 38 Everett St., Newton Centre. . . . It was announced last June that **Jack Randall**, XIII-A, SM, was appointed a department director at Combus-

tion Engineering, Inc., Windsor, Conn. Jack joined C-E in 1956 as manager of prototype engineering in the Nuclear Division. Previously, he served in the Navy from 1941 to 1956 during which time he was involved in the design, construction, operation and repair of aircraft carriers. Jack, who is a captain in the Naval Reserve, took his undergraduate degree at Stanford in 1942. . . . Another classmate in the news is **John Randolph**, XV, SB, who, with three associates, has just organized a new company, North American Computer Corporation, to lease computers to industry. Noting that 80% to 90% of computers now in use are rented, they intend to capitalize on this industry-accepted habit. The company will concentrate on the newest computing equipment as typified by IBM's System 360. Previously, John and two of his associates were with the Boothe Leasing Corporation, while the fourth partner was formerly associated with IBM's Data Processing Division. John was senior Vice-president of Boothe in charge of the New York office. While there he developed several major programs, including computer and railroad equipment leasing, which were promoted on a national basis. According to John their firm provides a third method of acquiring computers—lease arrangements with manufacturers and outright purchase being the other two. The firm, whose general offices are located at 200 Park Avenue in New York, also expects to build a future consulting service related to the computer field. His home address is 12 Middle Way, Old Greenwich, Conn. Best of luck, John, for great success in your new venture. . . . **Herb Shuster** was featured in a Boston Traveler article this past August as a "fortyish M.I.T. grad who operates a business in Dorchester and doesn't want any more business." Sounds like strange words indeed in these days of great competition. But to quote further, ". . . Herb and a staff of highly-skilled assistants . . . decide what you'll be eating six months or six years hence, and how it will be presented and packaged. They do feasibility surveys, almost exclusively on foods, for a wide variety of big food distributors and packagers. In years, the operation is young—a mere 10—and it came into existence after Herb had won his (bachelors, masters and) doctorate at Tech, taught there three years and put in a two-year stint with Stickney and Poor in Charlestown. Then he went out on his own and today he's at the point where he has all the business he can handle." Herb undoubtedly is a modern counterpart of Horatio Alger's famed heroes. . . . **Bob Swartz** is another of the late Prof. Schell's successes. He has been elected President of the Keystone Camera Company, Inc. Formerly Executive Vice-president, Bob has been with the firm for 10 years. He also is a member of that great fraternity of Tech men who have gone on to Harvard's B-School after graduation. . . . **Dick White**, founder and president of Automation Engineering Laboratories, Inc. of Stamford, Conn., gave a talk on "Opportunity for Education and the Individual" during one of the seminars at the 11th Annual Industry-Education Day

Symposium held in Bridgeport, Conn., last May. The symposium was sponsored by the Management Council of Southwestern Connecticut, Inc. . . . Congratulations to Elwyn Winne on being elected President of the Polymer Chemicals Division of W. R. Grace and Company to succeed fellow Tech-alumnus Ted Miller, who is retiring. He joined the parent company after graduation, and when the Grace Chemical Company (now Nitrogen Products Division) was formed in 1953, he became Vice-president in charge of development and a Director. Two years later he was made Vice-president of the Grace Research and Development Company. Then, in March 1956, he became Vice-president of the newly formed Polymer Chemicals Division, of which he was elevated to Executive Vice-president last January. El and his wife and four children live in Ridgewood, N.J. (Being a skier myself, I was very pleased to note that El is an avid golfer, skier and camper.)

While attending the First Northeast Aero Historians Conference in Hartford in October, I was most pleasantly surprised to run into my old buddy, Walt Mindermann, whom I hadn't seen for nearly 12 years. Needless to say, the interesting weekend turned out to be a happy reunion as well. Walt sold his meat-packing business in New York last year and moved to Connecticut to join Pratt & Whitney Aircraft in Hartford as an experimental test engineer. He's finally making his avocational interest pay off, for as many of you know, he learned to fly with the Tech Flying Club and has been avidly interested in flying ever since. In fact, for many years he had his own plane, a Stinson Voyager, and put many free hours behind the stick. He said he sold the Stinson last year and bought a real antique biplane, a 1929 Commandaire, which he is spending most of his free time rebuilding and restoring to its original flying condition using a Continental engine. He picked it up down in Florida, where in recent years it had been used as a crop duster. He's an enthusiastic member of the Experimental Aircraft Association, which has a real live-wire group in Conn. Walt's new address is 607 West Middle Turnpike, Manchester, Conn. 06044.

Shortly after moving from East Orange to Springfield last summer, I met **Bob McClintock** in nearby Summit. A former Course X man, Bob is now associated with the Hooker Chemical Company in New York working in the area of international development of the firm's operations. Concurrently, Bob also has his own consulting business developing foreign manufacturing facilities for U. S. manufacturers, procuring licensees and joint venture partners throughout Latin America. Until recently, he was managing director of the Corning Glass Works plant in Brazil. He was previously associated with the National Can Corporation, W. R. Grace & Company (in Peru, Chile and Ecuador) and the National Carbon Division of Union Carbide Corporation. Bob, his wife and three girls (twins, 13, and another 8) are now living at 11 Joanna Way, Summit, N.J.

Warren King, who many of you recall was formerly managing editor of Factory

magazine and then with a management consultant firm in Chicago, has also organized his own company, Warren King and Associates (20 N. Wacker Drive, Chicago, Ill. 60606). His firm is primarily engaged in studies and evaluation of government operations. To quote an editorial in The Everett (Wash.) Herald of April 9, 1965, "Back in 1963 when Gov. John Rhodes took office in Ohio there was a government deficit of \$83 million on his hands. By the end of the year and upon completion of a 'Little Hoover' report aimed at slicing off the fat in Ohio's state government the deficit had dropped to \$21 million. This is the same 'Little Hoover' report project which Gov. Dan Evans is now proposing for Washington and . . . will be under the direction of Warren King and Associates, Chicago management consultants, who supervised the Ohio study which showed that state how it could save between \$40 million and \$50 million a year without reducing services." Then on April 14, 1965, Gov. Evans issued an executive order implementing the proposal. In his letter, Warren added, "We are extremely pleased that our firm was chosen to direct a study of this magnitude and importance. Actually, this project will be very similar to the one in Ohio. However, since this is the second such project we have handled (Ohio being the first), we at least have some very excellent experience on which to rely. Aside from our work in Washington, we are also extremely busy in several other areas. In fact, the past year and a half has been one of the most exciting and gratifying experiences of my life." Our sincere thanks to Warren for his good letter (We hope others will follow his lead in writing us). We trust he will have every success, not only with the Washington project, but with all his firm's activities as well.

That's all the news for this month, but in closing we want to take this opportunity to wish each and every one of you a most joyous holiday season followed by a year filled with good health, happiness and prosperity.—**John T. Reid**, Assistant Secretary, 22 West Bryant Avenue, Springfield, N.J. 07081; **Robert R. Mott**, Secretary, Kent School, Kent, Conn. 06757; **Richard V. Baum**, Assistant Secretary, 1718 East Rancho Drive, Phoenix, Ariz.

'49

Herb Federhen writes from Ypsilanti, Mich., that he is "presently attending the University of Michigan, working toward a Ph.D. in electrical engineering. Have been in the army since 1952 (commission from ROTC at M.I.T.). Served in Formosa and Germany and have enjoyed every minute." Herb also served a hitch as Professor of Electrical Engineering at West Point. . . . **Oscar Noss** writes from Walnut Creek, Calif., that he helped start up the first unicracker at the Los Angeles refinery of the Union Oil Company of California in company with Dr. Henry Meiners, '42, Don Marshall, '48, and Oscar Eubank, '50. He is now in the

Oleum Refinery Process Engineering Department of Union Oil Company.

Paul Tausche is a senior manufacturing engineer with G.E. in Plainville, Conn., and says he is working hard but not making much headway. . . . Someone kindly dropped me a note to say that **Joe Altieri** is now the manager of the General Engineering Division of the Astro Dynamics Company in Burlington, Mass. . . . **Doug Steinman, Jr.**, is practicing architecture in Beaumont, Texas, with his father (Class of '25). Doug is a vice-president of the Texas Society of Architects and member of the Beaumont City Planning Commission. He is married and has six children.

Milt Bevington and Paula Lawson were married on April 24, 1965. Paula is a native of Atlanta, Ga., a lawyer, graduate of Middlebury College, Yale School of Law, and has done graduate work at the University of Caracas and the University of Mexico. The class extends its warmest best wishes to Milt and Paula. Milt is Chairman of the Board of the Chemical Separations Corporation which makes continuous ion exchange equipment. **Russ Cox**, **Bill Mitchell**, and **Bob Nesbitt** are setting up offices in the East, West, and South Florida respectively to handle Milt's equipment.

Lou Basel has been appointed Vice-president in charge of sales for Crawford and Russell Inc., engineers and constructors of Chemical process plants. He will direct sales in this country and abroad from the company's Stamford, Conn., headquarters. Lou holds B.S. and M.S. degrees in chemical engineering from M.I.T. and is a registered Professional Engineer in Massachusetts, Pennsylvania and Maryland. He is a member of the American Institute of Chemical Engineers and the American Chemical Society. He lives with his wife and two children at 63 Harvest Hill Lane in Stamford.

. . . **Bill Leavitt** is co-author of an article on Nondestructive Testing of Materials Using Neutrons which appears in the Army Research and Development News magazine. Bill received both S.B. and Sc.D. degrees from M.I.T. and is a physical chemist. He has been with the U.S. Army materials Research Agency in Watertown, Mass., since 1955. His principal field of interest is nuclear spectroscopy.

Francis Sullivan has been appointed director of the Electronics and Control Division in the National Aeronautics and Space Administration's Office of Advanced Research and Technology. In this post he will be responsible for research into all aspects of electronics and control systems, including guidance, communications, navigation, instrumentation, tracking, data processing and stabilization and control of aeronautical and space vehicles. Before joining NASA in 1962, he was an electronics scientist with the Naval Air Development Center, Johnsville, Pa. Before that he served on active duty in the Navy as an aviator and test pilot. He lives with his wife and five children in Springfield, Va. . . . **Leonard Bezark** has been appointed Vice-president in charge of administration of the Profexray division of Litton Industries. Profexray, based in Maywood, Ill., man-

ufactures and markets medical diagnostic X-ray equipment. Before that he was manufacturing manager for the La Pine Scientific Company of Chicago and Vice-president of its manufacturing subsidiary. Len is a member of the Instrument Society of America and the M.I.T. Club of Chicago. He lives in Highland Park, Ill.

John Moore, about whom we wrote in November 1963, got himself into the papers early this summer by receiving one of the experimental turbine automobiles which Chrysler Corporation has been turning over to motorists for test driving. John is a consulting scientist with Lockheed Electronics in Plainfield, N.J. He is currently completing work on his Ph.D. at Columbia University. The Moores live at 100 Lakeside Drive, Piscataway Township, N.J. . . . On September 1, **George Latimer** became light car planning manager in the Car Product Planning Office of the Ford Motor Company. George has been with Ford ever since graduation when he started as a statistician in the Lincoln-Mercury Division's Controller's Office and held various positions in that office before being named manager of the Division's Programming Department in 1955. He later served as assistant national service manager and assistant divisional controller for Lincoln-Mercury Division, and as parts and service planning and research manager for Ford Division. He is married and has four children.—**Fletcher Eaton**, 42 Perry Drive, Needham, Mass. 02192

'50

As the Holiday spirit starts to take hold and as we begin to plan and/or "get caught up in" the New Year; let's take a moment to wish the Class of '50 continued good health and progress. But this is not a wish that goes to you as a "group" . . . it is sent to you individually . . . and it is you, individually, that we want to know about and talk about in the 1966 notes. Let us hear a few words from you.

J. W. Geiser has been elected a Vice-president of West Penn Power Company. He has assumed executive responsibility for the company's power generation and related functions. He joined West Penn Power in 1950. During his first nine years with the company, he worked in power station engineering at its Springdale power station and general office, and spent a year at the Oak Ridge (Tenn.) School of Reactor Technology. In 1959 he was promoted to assistant manager of research and development; in 1962 to assistant to the Vice-president, engineering; in 1963 to director of engineering; and was elected as Assistant Vice-president in 1964. He is active in a number of professional nuclear and engineering organizations, and in electric industry research and study groups.

The following are some change of addresses for you to note down: **George A. Basta, Jr.**, 606 No. Franklin Ave., Hinsdale, Ill.; **Lowell S. Bensky**, 105 Corn-

wall Drive, Oaklyn, N.J.; **Eugene Biek**, 4344 Alta Mesa Drive, Redding, Calif.; **Donald Bishop**, Talmadge Hill Road, Darien Conn.; **James Burke**, 416 Siminole Road, West Acton, Mass.; **Warren M. Cheek**, West Hill Lane, Stamford, Conn.; **Kenneth M. Eldred**, Wyle Labs, 7800 Governors Dr. W., Huntsville, Ala.; **Walter K. Fales**, 923 East Fifth Street, Royal Oak, Mich.; **Loris M. Hailey**, 5510 Davison Ave., Kingswood Manor, Orlando, Fla.; **Harry H. Houdyshell**, 22872 Vista Del Sol, So. Laguana, Calif.; **Dr. Thomas J. McLeer, Jr.**, Cedar Hills, Route #3, Cambridge, Ohio; **Charles A. Magarian**, 15 Ruth Drive, Wilbraham, Mass.; **Major Stanley R. Meeken, Jr.**, 531 Tasker Ave., Folsom, Pa.; **William Millen**, Pennsylvania Bldg., Washington, D. C.; **Edwin B. Miller**, 1600 Lake Ridge Circle, Birmingham, Ala.; **Ross R. Quincy**, 28 Woodhill Road, Wilton, Conn.; **Dr. Roy W. Roth**, RR#2, Scribner Ave. Ext., Norwalk, Conn.; **Dr. William D. Walther**, 432 Canterbury Drive, Kettering, Ohio; **Louis Young**, 1542 Via Del Rey, So. Pasadena, Calif.

Joe Wilton has been appointed to the quality control division of Allegheny Ludlum Steel Corporation. Joe was previously with Wallingford Steel Company. He joined Wallingford in 1950 and now will relocate in Pittsburgh with his wife and six children. . . . **Mark H. Baxter** has been promoted to Vice-president of The First National Bank of Chicago. After serving in the U.S. Air Force, Mark joined the bank's auditing department. He was advanced to assistant cashier in 1956 and promoted to Assistant Vice-president in 1962. Mark is a member of the University Club of Chicago, the Chicago Yacht Club, and the Economic Club of Chicago. He, and his wife, and their three children live at 537 Earlston Road in Kenilworth. Best wishes.—**Gabe Stilian**, Secretary, St. Clair & Welch, Inc., Suite 4210, 10 East 40th Street, New York, N.Y. 10016.

'51

To all of you our warmest greetings for the holiday season and the new year. We shouldn't really discuss the new year until the next issue, but 1966 will mark the class of '51's fifteenth year out of the Institute. The Cambridge Committee, under the able leadership of **Fred Aldrich**, is actively preparing for the reunion which, like the tenth, will be held at Chatham Bars on Cape Cod. Again Fred would like us to remind you to reserve June 11 and 12, plan to attend, and if you would like to help—well, aren't volunteers always welcome?

Glenn Battaglia is normally with Educational Testing Services Inc., (Watertown, Mass.), and **Alive Erickson** is primarily an Assistant Professor of Mechanical Engineering at M.I.T., but both are now in India as part of the Kanpur Indo-American program. This program is a group effort of a number of U.S.

educational institutions to assist in the development of the Indian Institute of Technology in Kanpur. . . . **Orlo Powell, Jr.** has been appointed Assistant Professor of Mechanical Engineering at the University of Hartford (Conn.). Orlo served on the staffs of Hamilton Standard, Division of United Aircraft and Arthur D. Little prior to joining DeBell and Richardson, consulting engineers, where he still holds a post. Orlo and his wife Nancy (who is a physician), live in Wethersfield, Conn., with their two boys.

. . . **Robert Perry**, Professor of Chemical Engineering at the University of Rochester (N.Y.), was named Associate Dean of the College of Engineering and Applied Science there. Bob received his S.M. with our class. . . . Another graduate student from our class who has received a lot of well-deserved coverage is Dr. **Emily Wick**; Emily got her Doctorate in Chemistry in '51 and then joined the flavor laboratory at Arthur D. Little. She returned to M.I.T. first as a post-doctoral fellow and then as a professor in the department of Nutrition and Food Sciences. As of July 1 she has been the Associate Dean of Student Affairs at Tech. Dr. Wick is a heavy contributor to the technical journals and intends to continue her research and publishing (I have in front of me a copy of her article: "Chemical and Sensory Aspects of the Identification of Odor Constituents in Foods" from a recent issue of Food Technology), and in fact, she herself was the subject of a feature article published a while ago in one of the Boston Sunday papers. . . . **Maurice Hedaya** is secretary of the company: Holiday Fair. For those of you who are not really with it, that is the company that created the real raccoon-tailed "Rat-Fink" and has just contributed "Hairy Au Go Go" to mid-century America. Maurice says that he will send complimentary samples to all who request them—your secretaries are requesting them, Maurice!

'51 was well represented at this year's Alumni Officers Conference on the campus in Cambridge. In alphabetical order, and including their current locale: **Julian Busgang**, Lexington, Mass., President of Signode; **Harold Glenzell**, Longmeadow, Mass.; **Ray Haak**, Naugatuck, Conn.; **Charles Hieken**, Boston, partner in the patent law firm of Wolf, Greenfield and Hieken; **Fred Lehmann**; **Howard Levingston**; **Gilbert Lewis**, Bethesda, Md.; **Forest Monkman**, Kansas City, Mo., now Director of Research for Black, Sivalls and Bryson, Inc.; **Donald Reis**, Tarrytown, N.Y.; **Irving Safier**, King of Prussia, Pa.; **George Siefert**, Groton, Conn., Assistant Director of the Computer Center at Electric Boat Division of General Dynamics; **Hank Spaulding**, Bernard Spring, Great Neck, N.Y.; **Louis Sylvia**, Wilmington, Del., Du Pont; **William Whiston**, Cincinnati, Ohio, Proctor and Gamble; and **Harry Zimmer**, Rockville, Md. I regret that I wasn't able to talk to all of them and to report more extensively on their activities, families, etc., but maybe we'll make it up in a future issue. . . . **Roger Baumann** is in Paris with Compagnie Generale de Telegraphic Sans Fie (Roger says CSF for short), giving

seminars to keep the engineers from becoming obsolete. Prior to this Roger was with Republic Aviation. The Baumans added a second son to their family about a year ago. . . . **George Butzow** is vice-president and sales manager of Research, Inc.'s MTS Division, which specializes in closed loop electrohydraulic systems for physical tests. George has been with Research, Inc. since 1953. . . . **George Cattanach** is living in Gallup, N.M.; George was formerly living in National Park, Colo. . . . **Averil Chatfield** is working for Aerospace Corporation in San Bernardino, Calif. He and Gertrude are living in Redlands with their two daughters: Janice, 8, and Betty, 18. . . . **Fiore DiGiovine** is production superintendent of Boston Woven Hose Division of American Biltite Rubber Company, Inc., in Cambridge, Mass. Eva and Fiore recently evened out their family with a boy Daniel, to keep their daughter Donna Jean, three, company. . . . **Thomas Erber** is an associate professor in the Physics Department at Illinois Institute of Technology. . . . **William Fincke** is a senior engineer on the Polaris project at Sperry Gyroscope Division—his principal function relates to systems type of work. The Finckes have three children (oldest 12, youngest 9), and live in Lloyd Harbor, N.Y. . . . **Herbert Gevirmann** is with the firm of Gluckman and Gevirmann, accountants; Herb is a C.P.A. He and Mathilda are living in New York with their young daughter. . . . **Jay Gilmore** is with IBM's Systems Development Division where he is assistant for policies and instructions. He and Fran are living in West Nyack with Dawn, 6, Lori, 4, and Brad 3. . . . For the past two and a half years **Rodney Huppi** has been with Standard Oil of California doing geophysical interpretation relating to gravity and magnetic fields in the Pacific Northwest and Alaska. Rod and Virginia have two boys (ages 12 and 10), and live in Seattle. . . . **J. O. Salveson** is also in the Pacific Northwest and has been district geologist in the Seattle office of Standard Oil of Calif. . . . **Walter E. Johnson** is with the Metallurgy and Ceramics Laboratory of General Electric's Major Appliance Division. He has been with GE since 1960. Walter is active in professional affairs and is the current chairman of the Louisville chapter of the American Society for Metals. . . . **Abraham Nizel** is with the Department of Nutrition and Food Service at M.I.T. and has recently published in the Journal of Dental Research; the article published dealt with the effects of certain phosphates on tooth development in rats. (Can't we just put fluoride in their water?). . . . **Jim**, Martha, Mark, and Miriam Staples are living in Orlando, Fla. Jim is with Martin Marietta. I had written to Jim to find out why he had changed his address and he answered with a comment that I find pleasant to close on: ". . . the only change is the address. Current affluence makes possible a nice home on Lake Conway with trees and a view. We're ready for visitors." Watch out, Jim, you may just get them. . . . Again, Happy Holidays—**Howard L. Levingston**, Secretary-Treasurer, 358

Emerson Rd., Lexington, Mass. 02173; **Forest Monkman**, Assistant Secretary-Treasurer, 7500 East 12th Street, Kansas City, Mo. 64126.

'53

During the past summer a group of your class officers met over a beer to say an au revoir to **Marty Wohl**, I, who is going to the University of California for about a year under a very attractive NSF grant. We also took the occasion to discuss plans for our 15th reunion, which is under the chairmanship of **Dick Chambers**, XVII. Suggestions ranged from the Cambridge campus to a charter plan to some exotic isle. We would welcome any of your suggestions. Our rather poor performance on fund raising matters was discussed, and may I sincerely request that all concerned carry a little more of this obligation and opportunity.

Norman Doelling, VIII, is currently manager of Business Development at Bolt, Beranek and Newman, Inc., and resides with his wife, Monique and three children in Lexington, Mass. He is the author of numerous papers in the field of acoustics and a member of Sigma Xi and the Acoustical Society of America. . . . **John R. O'Donnell**, II, is taking care of three dependents in Medford Lakes, N.J., as sales manager, Steel Mill Division of the Philadelphia Steel and Wire Corporation. . . . **A.E.J. Gallagher**, III, is with the Western Knapp Engineering Division of Arthur G. McKee and Company. Al is involved in the planning of mineral processing plants.

Jay Berlove, XV, spent part of last summer on his honeymoon in Greece, Israel, Italy, France and England. The present address is 4828 University Court, Niagara Falls, N.Y. . . . **Robert T. Goldman**, VII, completed his M.D. at the University of Michigan and is now a pathologist at the Wayne County General Hospital in Eloise, Mich. . . . **John D. Riddell**, XVII, is living out in Salina, Kansas, with his wife, Nancy, and two children. John is vice-president of Sunflower Prestress, Inc., a manufacturer of prestressed concrete, and was honored with the Outstanding Young Engineers Award, 1965, by the Smokey Valley Chapter of the Kansas Engineering Society. . . . **E. R. Hall**, III, has been named assistant manager, Abrasion, Resistant Alloy Development for the Climax Molybdenum Company. Gene will be stationed in Denver and comes to this new post after extensive experience in the metal field with both Vanadium-Alloys Steel Company and Aerojet General Corporation. . . . **Richard S. Roberts**, II-T, has received a nice promotion and is now development manager, women's wear, of Celanese, and will be located at 512 Fifth Avenue, New York City. Dick comes to this post from Celanese in Charlotte, N.C. . . . Congratulations are also extended to Dr. **John Ehrenfeld**, X, who was appointed Director of the Applied Science Laboratory of GCA Corporation in Bedford, Mass. John has pub-

lished several papers in the fields of fuel cells, heat transfer analysis, aerosols and cryogenics. . . . I would again like to call your attention to the efforts of Ben Coe, X, who is a founder and director of VITA, an organization of "volunteers for international assistance." This group of scientists and engineers is a non-profit effort at raising the living standards of other nations through free, person-to-person technical assistance. Those in our class who would like to learn more about this group should contact Ben at 230 State Street, Schenectady, N.Y. 12305. All best wishes for a happy holiday season.—**Norman R. Gardner**, Secretary, 100 Memorial Drive, Cambridge, Mass. 02142.

'54

I trust your turkey was as good as ours and your Thanksgiving as pleasant. Among the things for which your Secretary was thankful were all of you who have sent him word of the activities and events in your and your fellow classmates' lives. If you haven't joined this group, include it among your New Year's resolutions (the ones you keep).

Frank A'Hearn, I, our Vice-president, and his wife Martha have adopted their second child. . . . **Malcolm Hepworth**, III, who is a graduate student at Purdue, spent last summer at the U.S. Steel Company's Research Center in Monroeville, Pa. . . . **Thomas Knapp**, XVIII, was a contributor to the June issue of the IEEE Transactions Circuit Theory.

From **Chuck Masison** comes word from **Sam Losh**, II, who wrote, "We have a home in Pasadena with rabbits, squirrels, skunks, finches and an occasional deer. It is very unusual to be within 15 minutes of downtown Los Angeles and be so close to nature." Sam is a project manager for Micrometeroid Sampling Instruments. . . . **Walt Kroy**, II, who left Douglas Aircraft to complete a doctorate at U.C.L.A., was married this summer to Doris Scherer of Lorrrach, West Germany. . . . **Bill Patten**, II, who lives with his wife and three-year-old child in Holden, was in Los Angeles on business this summer. . . . **Albert W. Vinal**, VI, has been appointed a senior engineer in advanced technology at IBM's Space Guidance Center in Owego, N.Y. He and his wife Joan have two sons, Peter and Andrew.

Only a few of us were present at Alumni Day in June; William Combs, I, Dean Jacoby, XV, Bill McTigue, I, and his wife, Bob Wagner, VI, and his wife, and Tony Romano, old XVII. . . . Chuck Masison, XV, Frank A'Hearn, I, Rolf Kates, VI-A, and Thorleif Knutrud, VI, attended the Sixth Annual Alumni Officers Conference at M.I.T. in September. Others of our class who were there in more official roles were Dick Finn, VI-A, Director of Industrial Liaison Office; Bill McTigue, I, Executive Secretary of the Educational Council; Dean Jacoby, XV, Assistant Director of Student Aid; and Paul Gray, VI, Associate Dean of Student Affairs.

Your Secretary has left M.I.T. (moving up the river) and is currently spending night and day studying Japanese at Harvard preparatory to a year at Keio University in Tokyo.—**Bob Evans**, Secretary, 43 High Street, South Acton, Mass. 01771.

'55

Having informed you of the reunion activities, we will try to bring you up to date on a few notable events in the lives of our classmates. It has been an exciting year for Ella (Paton) and **Dick Gardner**, who after ten years in the Detroit area returned east in June. Dick is now working with the Nassau County Planning Commission in Mineola, and they are living in Glen Cove. A busy summer of sailing and visits to New York City and the Fair was climaxed by the arrival of their first-born, Andrea Elizabeth, in September. . . . On September first **Gene Davis** became a partner in the firm of Mattern, Ware, and Davis, patent and trademark counsel, which maintains offices in Bridgeport, Stamford, and Danbury, Conn. Though Gene and Connie and their three offspring live in Stamford, where Gene is quite active in community and M.I.T. alumni affairs, his office is in Bridgeport. . . . **Dick DiBona** was elected Vice-president of sales at Microwave Associates, Inc., in Waltham in August. He and his wife and three children live in Wayland. . . . **Ed Riter** of Eden, N.Y., has been appointed operations research analyst of Bethlehem Steel's Lackawanna plant. . . . In June **Ash Stocker** received a master's degree in business administration from Ohio State University. . . . **Larry McGovern** at the same time graduated from Jefferson Medical College in Philadelphia. . . . Two other classmates, **Lloyd Vogel** and **Dick Lamb**, have acquired doctorates, but we have no details. . . . On the other side of the academic fence we now find **Paul Golden** in the physics department at Dartmouth, **Bart Roessler** at Brown, and **Art Brownlow** back in Boston at B.U. in the geology department. . . . At the University of Chicago, where he has been assistant professor of chemistry since 1963, **Lennard Wharton**, with four of his graduate students, is designing and building the first molecular beam accelerator, under an Air Force grant. . . . Sandy and **Dave Kramer** are looking forward to a journey east from Canoga Park, Calif., this winter for Dave to present a paper at the AIME in New York. We'll hold onto a few interesting changes of address in hopes of supplying details in a future issue.—Secretaries: **L. Dennis Shapiro**, Aerospace Research, Inc., 130 Lincoln Street, Boston, Mass., 02135; **Mrs. J. H. Venarde (Dell Lanier)**, 16 South Trail, Wilmington, Del. 19803.

'56

Barry Gordon has been appointed staff instructor of the Washington Education Center of IBM. . . . Dr. **Dave**

Hanson has been associate professor of statistics and mathematics at the University of Missouri since 1963, when he left **Sandia Corporation** in Albuquerque. Dave lectured last summer at a Symposium in Oberwofach, Germany. He received his masters and doctors degrees from Indiana. . . . **Nicholas Kiladis** has passed his Maryland bar exam after receiving his law degree from the University of Maryland. Nick is married to the former Mary Bahatouris of Baltimore and they have two children, Jamie and Kira. . . . **Gene Marcus** has left Raytheon's System's Engineering Department and is currently a project engineer with Sanders Associates. Gene wed Maxine Rosen back in 1956 and they have two children, Sharon and Gregg. . . . **Dr. Dave Markowitz** is in the Physics Department of the University of Connecticut. Dave is married and has a one-year-old son. . . . **Crosby Milliman** has left United Aircraft and is now teaching algebra and French at Fryeburg Academy, Fryeburg, Maine. . . . **Bruce Montgomery** received the Young Engineer's Award during Massachusetts Engineers' Week last winter. Bruce has been instrumental in designing and operating large magnets at Tech's Magnet Lab. . . . **Bob Santos** authored an article on optical masers for the March 1965 issue of School Shop. Bob, who works for New England Telephone, is most interested in these devices for communications. . . . In a last minute flash communiqué, **John Cowles** writes that on October 1 his wife gave birth to twins, Christopher and Kirsten.

By now all of you have received **Bob Malster's** letter and, in addition to contributing to the Alumni Fund, you are eager to sign up for the reunion. Well, next month we will begin requesting reservations, so make sure we have your right address. Remember only 40% of the class receives the Tech Review so tell your friends too. Merry Christmas to all and farewell to 1965.—**Bruce B. Bredehoft**, Secretary, 16 Millbrook Road, Westwood, Mass. 02090.

'57

The first bit of news to report this month is contained in a letter from **Gerson Meyers**: "I am now in Chicago practicing patent law; I've been here for almost two years. After graduation I entered OCS for the Navy and spent three years in San Francisco repairing ships in the shipyard. After the Navy, I returned to the East Coast for law school in Washington, D.C. I attended Georgetown at night and worked days at the Patent Office until I received my degree in October of 1963. After passing the Virginia and Illinois bar exams, I returned to Chicago. I am sorry that I have no family to report on, since I have been able to remain unattached since leaving Tech. I ran into **Herb Schwartz** recently; he is also practicing patent law but in New York with the firm of Fish, Richardson and Neave. Herb is now married. **Bill Schoendorf** and his wife, Ellen, and fam-

ily are in Ann Arbor now where Bill, who has received his Ph.D. in nuclear engineering, is working for Conducon.

A few brief items: **Stanley Cortell** is now serving as a research internist at the Walter Reed Army Institute of Research in Washington and thereby completing his military training. . . . **Morton Rosenstein** has been elected a town meeting member for the town of Needham, Mass. . . . **Charles Feldman** has been named assistant professor of mechanical engineering at Worcester Polytechnic Institute's Alden Hydraulic Laboratory in Holden, Mass. . . . **Harry Salesky** is executive vice-president of the Champ division of the Hat Corporation of America. . . . Cal Tech recently conferred a Ph.D. on **Jim Larson**. . . . **Bill Linko** has received a Sloan Fellowship for one year of study at M.I.T.; Bill has been with Inland Controls, Inc., of Boston. . . . Now back to the mailbag. Here's a letter from **Bob Rosin**: "My wife, Rosalie, and I have been living in New Haven for the past year. Recently we were joined by Betsy, our new roomer of age eight weeks. As you might be aware, this tends to curtail some activities and our ability to see friends. **Bob Green** and family dropped in recently on their way back to Cambridge where Bob will embark on a masters in the Sloan School at the Institute. We are here because of a local school which claims supremacy of Bulldogs over Beavers. I am an assistant professor in Engineering and Applied Science and attached to the computer center as well. It is a hectic but enjoyable life. There are plenty of good students and good computer facilities. It is a real change to be at a school that is a second-rate computer power. Among other things, it means I have an opportunity to contribute and influence a previous vacuum." . . . Rounding out the column for this month is **Charles Murray**'s letter: "Following graduation from the University of Minnesota Medical School in 1961 (AOA 1960) I took my internship at the Minneapolis General Hospital. For the past three years I've been at Stanford for my residency in internal medicine. During the summer I entered active duty with the USAF and am now assigned to the Scott AFB Hospital. My wife, Hilda, graduated from the University of Minnesota in 1960 with a B.S. in nursing. We have three children, a girl and two boys." . . . That's all for now. Next month I'll publish a letter from **Don Park** among other items.—**Frederick L. Morefield**, Secretary, 457 Harris Road, Bedford Hills, N.Y. 10507.

'58

Hello again after a hopefully relaxing but busy summer. Despite the drought, a small deluge of news poured in over the summer. The new Alumni Fund return envelope with the space for class news proved to be the top news-gainer of the year, so far. Several good letters, too—keep it up!

Amid the news were two events which seemed to reflect the paradox of South-

east Asia. Somehow the events in that troubled sector of the world seem less remote when they touch the lives of our classmates.

First, an extremely interesting and penetrating letter arrived from **Earl Rose** concerning a classmate serving as a military advisor in Viet Nam. Earl writes: "Tonight, while reading with one eye and watching WGBH-TV with the other, I sensed a ring of familiarity to the face and voice flickering across the screen. The face and voice were on a mountain in Vietnam, engaged in getting a radio broadcast through heavy Viet Cong jamming. The face was topped with one of those green berets and the voice was calling down an air attack on some of the local guerrillas. The film was one of those 'artful' examinations of men at war and, try as I did to see the name tag, it was five minutes until I could confirm my suspicion that behind the square jaw and military jargon was **Jim Kennedy**, VII. I never did get his rank, but there he was, apparently was in the Army to stay. Well, in the heart of Viet Cong land. The last time I saw Jim was during a two week camp at Fort Lee, Va., where he was stationed. He already had gone Airborne and apparently was in the Army to stay. Well, he has stayed and gone all the way with Special Forces and no matter what we may each feel about the why of Vietnam, he is there and sweating this thing out for us. Jim's face and voice made me feel closer to the men who have to make the most of this thing. Perhaps we shouldn't require this personal reminder—but that's the way things go. I'd like to know if anyone knows more about Jim's whereabouts. By the looks of that mountaintop it would seem that even the most remote touch with home would be welcome to him."

The second news item emerging from this land concerns a classmate serving with the Peace Corps. This summer, after two years in Thailand, **Michael West** has returned home accompanied by his lovely bride Yupiter. She is delighted with the United States and has a cousin, from Thailand attending college in New York City. They have been home with Mike's family in Hastings, Mich., this summer. After his two years experience in Thailand, Mike has the highest praise for the Peace Corps as the most effective means for the U.S. to aid other countries.

In our mail for the holiday issue was a letter from **Joel Shulman** noting that his new address in New York City signified a new job, larger quarters, and more interesting neighbors. "My new job is for a small company making solvents and emulsions in Nutley, N.J. I have also been active in extra-curricular activities as president of a reform Democratic political club and also have been active with civil rights. On the distaff side, Sheila also has a new job working in the office of Congressman Johnathan Birmingham. Recently I saw **Carl Schwartz**, Course X, who was at the reunion with us; he is living in New York City and working at American Cyanamid in Wayne, N.J. Haven't seen **Lennie Eng** for many months but he is living in Bloomfield, N.J., and working at Esso in

Linden, N.J. They have one boy. **Al Russell** is back in Phoenix working at Ai-Research after several years teaching at the University of Connecticut. I think he has only to complete his thesis for his Ph.D. from U. Conn. Al and Beth have three children." Thanks for all the news, Joel—you've got another vote if you switch from engineering to politics.

Received another letter from England, this one from **Toby Carlson**, who has actually returned to the States by the time you read these notes. "I have finished my Ph.D. thesis in meteorology and intend to return in September (as yet unemployed). Our daughter Diane is now an active one-year-old. Before returning, we hope to see a bit more of Europe and the U.K. In September the expatriate colony of M.I.T. 58'ers at the University of London will disappear with the nearly simultaneous return of **Arthur Alexander** and **Gerald Guralnik**. Art has obtained an M.S. degree from the school of economics while Gerry had been putting about as a post-doctoral doing work in theoretical high energy physics. We also saw **Mel Copen**, who briefly flitted through with wife and 16-month old daughter Erica. They are touring Europe on their way back to India where Mel is teaching at the Indian Institute of Management and writing his thesis for Harvard Business School. He expects to finish for good next spring."

Paul Larson writes that in June he received his Ph.D. from the University of Delaware in Chemical Engineering. He has taken a job with DuPont in their film department in Buffalo. Paul and Irene now have a two year old daughter Lisa and they are living in Grand Island, N.Y. . . . **Ed Goldman** was recently appointed chief engineer of Mitron Research and Development Corporation, where he has been working since 1962. He and his wife Benita and their daughter Roberta live in Randolph, Mass. . . . **Dick Solo** is now an assistant professor of chemistry at State University of New York at Stonybrook. Dick is married and has two sons, Michael and David. . . . **Jason Taylor** is now with Avco in Wilmington, Mass., after several years at American Science and Engineering, Cambridge. He and his wife, the former Gail Korey of Stoughton, have two boys, Michael, 4 and James, 2. In 1963 he received an M.S. in Physics from Northeastern University.

From the West, **David Woodward** reports that he received his Ph.D. in Physics from the University of Colorado in 1963. While attending his ten year high school reunion, Dave met classmate Betty Mieras Kunz and they were married in October 1964. They are living in Los Gatos, Calif., while Dave is working at IBM San Jose. . . . **Alexander Sigethy** has been made head of the Soluble Processing Department of Maxwell House Division, General Foods Corporation in Houston, Texas. . . . **Robert Schmidt** left Boeing in September to continue full time on his Ph.D. in Aeronautics at the University of Washington. Bob also left the bachelor ranks in September, 1964, and he and his wife are continuing to live in Seattle at 3630 W. Commodore Way.

... Despite the fact that it is mid-autumn at this writing, your Secretary, bolstered by all this news, has mustered enough advance holiday spirit to wish you a Merry Christmas and a rousing New Year!—**Michael E. Brose**, Secretary, 205 Pine Street, Tecumseh, Mich.; **Antonia D. Schuman**, Western Associate, 22400 Napa Street, Canoga Park, Calif.; **Kenneth J. Auer**, Midwestern Associate, 23105 Stoneybrook Drive, North Olmsted, Ohio.

'59

It is with a guilty conscience of sorts that I approach the class notes this month. After all my complaints about the lack of correspondence from my faithful but generally non writing readers, I failed last month to include any mention of an interesting letter which has been sitting on my desk now for some time. With apologies to **Bruce Hayworth** for the oversight, I shall proceed to rectify my error. After graduating from the Institute, Bruce joined General Dynamics/Convair in San Diego as a junior physicist in the field of plasma physics research; last year he was appointed staff scientist. During the course of the research, he helped to develop an energy storage capacitor much improved over the state-of-the-art at that time. Along with some equally enterprising colleagues, he left Convair last June to form a new corporation, Maxwell Laboratories, dedicated to the manufacture of the capacitors; he is now serving as a Director and Vice-president of the fledgling company. Bruce and his wife, Helen, have two boys, Mark (5 yrs) and Brent (4 yrs). As a joint hobby, the family roams the desert seeking ghost towns in a 1½ ton, 4-wheel drive International; Bruce reports that the truly deserted towns which have been missed by Sunday drivers are becoming increasingly scarce, however. He also mentions **George Kraft**, who passed through San Diego recently; George, married with one daughter, has a newly-won Ph.D. from Case and was looking for a job on the West Coast when last seen.

In the sports light this month we have sailors **Bill Widnall** and **Dennis Posey**. Bill, sailing for the M.I.T. Nautical Association which, to quote Yachting magazine, "he so well represented as a collegian," captured the Charles H. W. Foster Memorial Trophy in a championship race this summer; sailing in Finns, he failed to win a race, but his overall performance was enough to put him well ahead of his competitors. More recently, Dennis Posey saved both a race and a life in the cold waters of Marblehead harbor. While fighting to take the lead in a race, according to one of the local newspapers, Dennis picked up a crew member of the boat ahead who had accidentally fallen into the deep. No newcomer to racing, Dennis knew the rules well and avoided all efforts of the other boat to recover their missing crew member; the other boat, consequently, was

forced to quit the race, since the rules require that a boat finish the race with no fewer crew members than it started with.

On the technical side, there are several recent papers by '59ers to announce: **Joseph Burgiel** (co-author), "Antiferromagnetic Resonance Linewidth in MnF₃ near the Transition Temperature;" **Gary Falkenstein**, (co-author), "Dielectric Properties of Polyanion-Polycation Complexes;" **Agris Kalnajs** (co-author), "Some Physical Properties of Nearly Perfect Natural Diamond;" **Robert Noble** (co-author), "Casein Micelles." . . . At Old Dominion College in Norfolk, Va., **Michael Bottino** has a \$28,000 NSF grant for a study entitled "Volcanics and Related Granites;" on the faculty at ODC, Mike is measuring the isotopic ages of minerals and rocks. . . . Here at the Institute, **Donald Avery** is being extensively referenced for his work in superplasticity, the ability of certain alloys to be stretched to perhaps 1000 times their original length without necking or failure. . . . From the pages of "The Tech", we find that **Alan Oppenheim** has joined the move towards progressive teaching; he has introduced programmed teaching, where the student receives all homework with the answers at the start of the course and sets his own pace for learning, into one of his classes in electrical engineering at M.I.T.

That's all for now, but, before I fade back into my academic fog, I would like to wish you all a very happy holiday season.—**Glenn Zeiders**, Secretary, 3 Rose Avenue, Watertown, Mass.; **Wayne Worrell**, Assistant Secretary, Lawrence Radiation Lab, Berkeley, Calif.

'60

We have a letter from **Larry Elman**; he was married in August 1960 to Linda Laurans, worked at the Aeroelastic Lab at Tech until December 1960 when he went off to Texas to start a three year tour with the Air Force. Three years later he left the Air Force as an Instructor in a Missile School Squadron. In 1963 he began night school at R.P.I. (Hartford branch), working towards a Ph.D., while working for the Research Labs of United Aircraft in East Hartford, Conn.—"A darned fine place to work. My main outside interest is aviation history. I belong to every organization in that field you can name, and mainly I do research on camouflage and markings. I have become an amateur author—nothing published yet but two articles due to be in a few months . . . if you know of anyone with an attic full of old airplane pictures (preferably unpublished shots of war planes in camouflage of any war) let me know . . . if any of you pass through the Hartford area, look me up. We live in a Hartford suburb called Glastonbury—eight miles by expressway, but my backyard is a corn field. Incidentally, **Barry North** visited us a few weeks back. He was seriously ill, but is now recovered and as humorous as ever." Larry and

Linda have two children—Jonathan L., born in April, 1965, and Robin Amy, born in 1961.

Ken and Mimi Freeman had a baby girl, Jennifer Elaine, on September 15. . . . **Narinder Saluja** was married on August 16 in Bangkok, Thailand, to the former Carolyn Clement from Needham, Mass. After a wedding trip to India, the couple will live in Bangkok. . . . **Doug Nelson** is now attending the University of Hawaii for one year to get an M.B.A., under an Air Force program. . . . **Ken Graham** was awarded the U.S. Air Force Commendation Medal in April; he is an aeronautical engineer in the Gemini launch vehicle directorate of SSD, Los Angeles. Ken is married to the former Cynthia Bishop of Waban, Mass.

Salomon Scroussi writes, "I can be reached at the Travelers Research Center in Hartford, Conn., where I work as a Senior Programmer. But chances are that you might bump into me at M.I.T. as I have been working through a contract for the Meteorology Department." . . . **Pat McGovern** writes, "I was married to the former Susan Sykes of Darien, Conn., last summer, and we now have a handsome young man in the family named Patrick III . . . all of a few weeks old. Sue and I are owners of the International Data Corporation, a market research firm specializing in the computer and data processing field. I am also associate publisher of Computers and Automation magazine."

Tom Cover is an assistant professor in the Electrical Engineering Department at Stanford. . . . **Morris Kriger** writes, "Have a son, Sydney, three years old, and a daughter, Rose, nine months old, and on February 15, 1965, entered the general practice of law by forming the firm of Shainberg and Kriger—thus uniting Yale and Harvard, respectively."

Richard de Neufville has been chosen as a White House Fellow; he and his wife, the former Judith Innes from Boston, will live in Washington for the year of his appointment. (White House Fellows are sort of interns in government.) . . . **Bill and Susan Ross** are living in Boston. Bill has opened a harpsichord shop in Boston; "My shop is newly opened and needs visitors and customers." **Al Shaleck** is working for Grumann Aircraft doing proposal and bidding work. Al brought news of **Mark Dichter**; Mark is producing and filming movies in New York. . . . **Peter and Eleanor Silverberg** have moved to East Hartford, Conn.; he is now with Pratt & Whitney Aircraft and writes, "Hartford is a great place to live. **Paul Farris** also works at P & W." Barbera and Gerry Stephenson were at the reunion cocktail party; they're living in California but were in Cambridge for Gerry to pick up his Ph.D. Barbera is still working for Digital Engineering Corporation, now at their California office. . . . **Robert Stoeckly** is living in Pasadena; he's at Cal Tech, Astronomy Department, on a post-doctoral fellowship doing research in stellar atmospheres. . . . **Dave Straight** and his wife have just moved to Newtonville from the M.I.T. married student housing; they have three children: 2 girls, 1 boy. Dave

got his M.S. from the Sloan School in June and is now on the D.S.R. staff as a research staff associate. He is doing research on the organization and management of R & D with Professor D. G. Marquis. . . . **David Svahn** graduated from Columbia College of Physicians and Surgeons in June and is now doing his internship at Cooperstown, N.Y. He and his wife, Karin, have one daughter. . . . News from the Rockefeller Institute—**Michael Ruttenberg** has been awarded a two-year research fellowship at the Weizman Institute of Science, Rehovoth, Israel, and will work in the laboratory of Dr. Ephraim Katchalski. Mike is married to the former Nancy Wallace Bauer from Cambridge.

Bruce Abbott has joined the staff of Thomsen-Abbott Construction Company of Marshfield and Rothschild, Minn. Bruce, his wife Beverly, and their five-year-old daughter Kate are living in Rothschild. Bruce got his M.S. in Civil Engineering in 1961, then worked as a structural design engineer at Lincoln Labs; in 1962 he joined the Solids Mechanics Research Division of the I.I.T. Research Institute as an associate research engineer in the experimental mechanics and materials section.

Christopher Carl writes, "Came to California four years ago. Worked for Autometrics in Anaheim, presently at Jet Propulsion Laboratory working on Mariner and Surveyor Spacecraft programs. Will receive M.S.E.E. from U.S.C. next January." . . . **Bill Kleinbecker** writes, "I am now living outside of Hartford, working as a salesman for IBM; we have a six-month-old daughter, Carole Lyn." . . . **Allan Bloom** has been appointed teaching fellow in Psychiatry at the Harvard Medical School and its associated teaching hospitals. Al received his M.D. from the University of Pennsylvania School of Medicine in 1964; he is associated with the Massachusetts Mental Health Center.

Degree recipients from Princeton this June: **Robert Frank Stengel**, M.S. in Engineering in Aerospace and Mechanical Sciences; and **Albert Charles Dierckes**, Ph.D. in Chemical Engineering. . . . From Ohio State University: **Simon C. Simonson** received an M.S. in June. . . . **Ronald Agronin** received an M.B.A. from Miami University in Oxford, Ohio, this June. . . . **Bob DeMichaels** received his M.S. in meteorology from St. Louis University in June. . . . **Gerald Smith** received the degree of Doctor of Medicine and Dentistry in June; he is married to the former Ida M. Wickmann from Munich, Germany; he is now serving a one-year internship to be followed by residency training in Obstetrics and Gynecology at the Strong Memorial Hospital in Rochester.

Tom Alexander writes, "I have for the first time moved into an unfurnished apartment. I have on order a steelcase metal desk for my front room; I also intend to buy a vibraphone. I played the marimba while I was in my early teens and had to give it up when I went to prep school." Tom is living in Santa Ana, Calif. . . . **Ray Ambrogli** is manager of the Forming Research Department, Process Research Center, Corning Glass

Works. . . . **Gus and Jeri Andrews** write, "Jeri is now working as a programmer doing bio-statistical analysis for the UCLA medical school—I find it extremely interesting; most of the work has been studying EEG and EKG records and data in newborn and premature infants. Gus is working for a Ph.D. in math at UCLA and we are living in the UCLA student housing. We have two children, Eric 4 and Margaret, 1 year."

Bob and Joanne Barrett are living in Seattle; they have a daughter, Linda, almost 2 years old. Bob writes, "Find a master's program in Mechanical Engineering is challenging. Spent last summer in Italy with a Christian Literature Crusade. Great fun!"

Keep the news coming; and if you run into classmates, let me know where they are and what they're doing. I have addresses (most of them recent) for the whole class, so if you're trying to track someone down, let me know. By the way, **Tom Farquhar**, 52 Mayo Road, Wellesley, Mass., still has Class of 1960 playing cards. Send Tom \$1.25 for each deck you'd like, be sure to specify color (red or grey) and include your name and address with the money. (The \$1.25 includes postage). —**Linda G. Sprague**, Secretary, 345 Brookline Street, Cambridge, Massachusetts.

'61

Brace yourself, another reunion mailing should be on its way. This one is replete with a color pamphlet extolling the virtues of the Island Country Club. Very impressive it is, too. Very impressive, also, is the response to our first mailing. It looks as though the '61 5th reunion is going to be unusually well attended. To refresh your memory the reunion will be on Martha's Vineyard starting Friday night June 10, and continuing deep into Sunday the 12th. If you want information beyond that mailed to you please don't hesitate to write.

Dewey Doo-Yung Ryu wins the reunion sweepstakes! His was the first response to the reunion mailing. He manages to squeeze into the four available lines on the reply card that he had worked for Comstock and Wescott Inc. for a year and a half after graduation. Then he returned to M.I.T. and is currently engaged in activities leading to an Sc.D. in Biochemical Engineering. Dewey said that he and his wife will be at the reunion.

I bumped into **Mike Leis** at the Memorial Drive Stop and Shop a couple of weeks ago. He was looking unusually domestic, reaching to the frozen corn. Mike pushed his shopping cart out of the stream of traffic and told me that he is involved in unmentionable work at the Instrumentation Laboratory and that he has been writing a masters thesis for the Electrical Engineering department. Mike also mentioned that **Ken Kotovsky** had been in Boston during the summer. Ken has been working on a doctoral dissertation in Physiology at the University of Pittsburgh.

Peter Hurwitz and **Henry Lieberman** are both at Brandeis working toward doc-

tates, Pete in chemistry and Henry in math. Henry writes that he is a particularly proud father of a son (Robert) who was born on Henry's birthday last year (Sept. 26, 1964). Chief diaper changer in the Lieberman family is the former Elizabeth Caeser, Wellesley '63.

Al Brennecke writes (via Issue 2 of the Sigma Chi '61 SNORTS) that "Kiki and I had a great vacation in May, enjoying 19 days in Europe. She met me in Paris where I was completing a business trip, then we drove through Germany along the Mosel and Rhine Rivers. We stopped at Darmstadt where I took her to some German lectures at the university I attended in 1962. We continued on to Heidelberg, the Black Forest, Zurich, Lucern, Bern and Geneva, finally returning to Paris. Three days in London put a great capper onto a fine trip."

'61 SNORTS is also responsible for the following info: **Earl van Horn** tied the knot on June 19, 1965. He and Sandy planned to spend last summer at U. Mass., moving to Boston in the fall.

Joe Harrington is Honorary Secretary this month. He writes: "Saw **Pete Bankson** in July; he and his wife Margery stopped at NW 12 (M.I.T.) for a chat. He is back from three and a half years in Fairbanks, Alaska, where he was commander of an infantry company. He was in the process of taking two months leave before reporting, in late August, to Fort Benning, in Georgia, for nine months further training. His plans beyond that were uncertain. While in Alaska, the Banksons covered a good bit of ground, camping and skiing; in addition to this Pete saw even more of the state while on duty." Joe, when I last saw him, was still at the reactor rushing to finish off his thesis before leaving for Europe and the depths of Australia.

As you can see lots of people are moving around the countryside. Every month I get several dozen address changes which are carefully filed. We can't print them all here so if you want the location of a long lost buddy just send me a note. You might also enclose a couple of lines about yourself for the benefit of the class notes.—**Andrew Braun**, Acting Secretary, 1038 Beacon Street, Brookline, Mass., 02146.

'62

Oliver Smoot wrote "Being one of your most ardent readers and possessing a natural desire to see my name in print, I will accede to your request for news; I am doing systems programming for the Weapons Systems Evaluation Division of the Institute for Defense Analyses here in Washington, D.C. My wife, the former Sandra Curry, is a systems Engineer for IBM, so to introduce some external diversion I have been attending the Georgetown University Law Center and will receive my L.L.B. next February if all goes well."

Second Lt. **Pete Thurston** completed an engineer officer basic course at Ft. Belvoir, Va. . . . **Jeff Steinfeld** and **Keith Ferguson** attended Alumni Day at M.I.T.

in June. . . . **Victor Schneider** received an NSF summer fellowship and worked on a dissertation in the field of language processing by computer. . . . **Dave Stare** graduated with an M.B.A. from Northwestern University and is now living near Baltimore and working for the Baltimore and Ohio R.R.

While in the Bay area this summer, I tried to contact **Bill Bloebaum**, with whom I had graduated from Stanford Business School in June, 1964. His phone was disconnected. I received a clipping two months later that satisfied my curiosity. He was named technical sales representative, organic chemicals, for the Oronite Division of Chevron Chemical Company. He is headquartered in Anaheim, Calif., and is responsible for sales of organic chemicals throughout the Los Angeles area. Bill completed the division's technical sales training program in the company's home office in San Francisco. . . . **David Butler** of Mesilla Park, N.M., was awarded a 1965-66 fellowship by Socony Mobil Oil Company. He is majoring in geophysics at the Colorado School of Mines. He is married to the former Francine Kady of Las Cruces.—**Jerry Katell**, Secretary, Oceanic Properties, Inc., 401 Kamakee St., Honolulu, Hawaii 96803.

'63

Last June the following people received advanced degrees: **Stuart Cooper**, M.A. at Princeton; **Frank Kosdon**, M.S. at Princeton; **John Castle**, M.B.A. with High Distinction from Harvard; **Raphael Soifer** and **Bob Johnson**, M.B.A. with Distinction from Harvard; **Bernie Hopp**, M.B.A. from Harvard; **Philip Graham**, M.S. from R.P.I. Phil also married Kathleen Hay and has begun two years with the Navy at the Naval Air Turnbine Test Station at Trenton, N.J. . . . **Allen Clark** got his M.S. in XX in September then he began work on his doctorate. . . . **Anthony Geissler** is back at the Institute in XX. . . . **Stephen Levine** is now with the Dynamics Research Corporation in Stoneham, Mass. . . . **Jack Solomon** married Fay Papa last June. They are now in Manhattan while Jack continues his work at Columbia. . . . **Roger Wallace** is back at the Institute after a summer with Bell Labs. . . . **William Wolf** is with IBM, has been married to Susan Alexander since September, 1963, and is now living in Canton, Conn. . . . **Alan Frey** married Florence Levins last June and is continuing his work at U. of Virginia Law School. . . . **Harold Payson** and his wife came to Alumni Day last June. . . . **Gerald Shapiro** is with Raytheon now; **Paul Milner** is with CBS TV; **Jim Holcroft** is back from the Peace Corps; **Bill Weber** got married last June; **Richard Trilling**, **Herb Eagle's** campaign manager, is now at the U. of Michigan; **Mike Denny** is married and working on his Ph.D. at Berkeley. **Ted Cohen**, **Elliott Bird**, and **Bjorn Conrad** are all married. **Ron** and **Ann Matlin** had a baby boy. . . . **Jim Nick** married Pamela Harrison last August. He is finishing his M.S. at the U. of Washington while working at Boeing. . . . **Bob Johnson** is with Burdine's in

Miami and is teaching at night at the U. of Miami. Send any news whatsoever to: —**Bob Johnson**, 1089 N.E. 91 Terrace, Miami, Fla.

'64

I'm in desperate need of news for future issues. If every member of the Class of '64 who is now reading this would immediately send me news of himself and of others in our class, we will be able to have a large exchange of the current doings of our classmates for the 1966 issues. This means you, so please get off a letter to me instantly! You will be rewarded by your name in the news and credit for revealing the heretofore secret doings of our classmates.

In this issue several names come from the pen of **Dick Carpenter**, one of the members of our class executive committee. Dick finished his thesis this August for his S.M.E.E. and is now out in the real world working for Boeing in Seattle. Dick also contributed \$4 to the class treasury, answering the call for help that originally went out last February. Our treasury, by the way, now stands at about \$110. **John Halpern** wrote an article printed in the British Journal of Physical & Chemical Solids this year. The article was entitled "Magnetoabsorption of the Indirect Transition in Germanium" and the work enabled him to determine the masses of conduction electrons. . . . **John Hanson** married Miss Stephanie Morgan this June in Boston. He is working on his M.S. and living in Watertown. She graduated from Colby Junior College in 1963. . . . **Tom Herbert** is studying biophysics at Johns Hopkins. . . . **Dennis Hinrichs** is an Air Force pilot trainee at Laughlin AFB, Texas. He has completed his solo flight in a jet trainer and will receive his pilot wings at the end of the year-long program. He is married to the former Margaret Kippen of Gloucester, Mass. . . . **Allan Kessler** is a research assistant at M.I.T.'s Center for Internation Studies. He is working toward a Ph.D. in political science. . . . **Donald Lakin** is in grad school at the U. of Chicago. This summer he was an intern at the Center for Naval Analyses of the Franklin Institute in Arlington, Va. . . . **Martin Ormond** is at Northwestern Business School. This summer he worked at the 3M Company in the marketing research group. . . . **William Pedersen, Jr.**, has been awarded a Rome Prize Fellowship in architecture at the American Academy in Rome for this year. He was born in St. Paul, Minn., and received his M.Arch. at M.I.T. . . . **Jon Price** used the PDP-1 computer to generate the design for a recent issue of Fortune Magazine. Fortune's art director told him what he wanted and Jon made the tape. . . . **Shant Saraf** wrote an article appearing in Industrial & Engineering Chemistry concerning pressed catalyst pellets. . . . **Julien Sprott** of Memphis was married to Mary Ann Royal this past summer. He is studying for a Ph.D. in plasma physics at the U. of Wisconsin and she is in nurs-

ing school. . . . **Pierre Swick** received his pilot wings after training school at Webb AFB, Texas. He won the academic award for his training class. He is now in the Massachusetts Air National Guard in Boston. . . . **Howard Wactlar** is studying physics at the U. of Maryland.

The chief contributor to this issue is **Bruce Strauss**, another exec committee member, that I bumped into recently at the Harvard Coop. Bruce hopes to finish his Ph.D. in metallurgy at M.I.T. a year from February. His wife Judi is in the graduate teaching program at Harvard. In addition to telling me that the prices at the Harvard Coop are less than at the new Tech Coop, Bruce also informed me that he became the father of a baby girl either in March or April (he couldn't remember which)!

Len Buckle is in the Army at Redstone Arsenal, teaching E.E. to the troops. He is engaged to Suzanne Thomas of Virginia and Wellesley College. . . . **James Buritch** received his Ph.D. in chemistry from M.I.T. in '64 and has recently been appointed to the faculty at Cornell. . . . **Jerry Burnett** received his M.S.E.E. from M.I.T. in September and is now working for Autometrics in Anaheim, Calif. . . . **John Eulenberg** is continuing his studies in linguistics at Harvard and periodically turning out movies on witchcraft, which are shown at Club 47. He recently led the M.I.T. Reform Jewish High Holy Day services in the Chapel. . . . **Jim Giffin** and **Bob Grant** are both at the Harvard Business School, having both received their masters in E.E. this past summer. . . . **Asif Khaliq** participated in the 1965 Technical Summer Program at the U.S. Steel Research Center in Monroeville, Pa. Asif received his M.S. in M.E. in '64. . . . **Bob Kimmel** received his M.S. in June and is continuing at M.I.T. Deeanne Moore of Smithfield, N.C. received her M.R.S. that same month by marrying Bob. . . . **Steve Miller** bumped into me on Mass. Ave. sometime in September and was indignant that I had "accused" him of going to Harvard Business School, whereas all this time he continues to learn his ABC's from that superior institution down the river. . . . **Bob Sanders** received his M.S. in E.E. from Penn. and is now working for the General Telephone Advance Research Lab on Route 128. . . . **Dave Saul** received his M.S. in June from M.I.T. Labor Day Weekend he was married to Miss Susan Fromson of Pittsburgh and Wellesley, and now they both work happily together for IBM. . . . **Bob Scott** continues to work for Dean Brown in the school of Engineering. . . . **George Theodoridis** wrote an article entitled "Cesium Ion-Beam Neutralization with Energetic Electrons" in a recent AIAA Journal. . . . **Len Theran** is in his second year at Stanford Business School. . . . **Jerry Weiner** is engaged and continuing his studies at M.I.T.

As a final note, I would like to announce my own engagement to Miss Betsy Dunn of New Haven, Conn. She is now a junior at B.U. We will be married June 11, 1966.

Let me hear from you guys—**Ron Gilman**, Secretary, Dane Hall 102 Cambridge, Mass. 02138.

Club News



New Mexico Group Meets On Indian Reservation

The M.I.T. Club of New Mexico invaded the Santa Clara Indian Reservation last August 7 at a site in Santa Clara Canyon chosen by Les Redman, '47, of Los Alamos, with the kind permission of Governor Paul Tafoya of the Santa Clara Pueblo. Henry Sandmeir, '52, who initiated the whole idea, was there with his wife Antoinette to greet early arrivals and watch over the commissary, aided and abetted by Tom and Lois Godfrey, '50.

By late afternoon 36 members and guests had assembled and begun partaking of Helen Redman's marinated shrimp, Antoinette's Swiss style potato salad, and steaks broiled to order by Henry. The proceedings were anointed with beer from the pitcher of Ted "Hebe" Alexander, '32. Although this was an M.I.T. group, practice seemed to belie our old school song—the steins were far more often in the hand than on the table.

The scene, deep in the Jemez Mountains in a pine-forested canyon, was ideal. Skies were clear with only occasional fleecy clouds contributing passing shadows. En route up the canyon some of the members paused at the Puye cliff dwelling ruins abandoned late in the 13th Century by ancestors of the Santa Clara Indians.—David Caskey, '63, 205A Charleston N.E., Albuquerque, N.M. 87108.

Technical Seminar Series Is Planned in Washington

The M.I.T. Club of Washington began the new season with a beer party on September 14 at the Potomac Boat Club. Nearly 120 people renewed friendships, discussed the summer's events, and enjoyed some excellent Air Force movies on the history of the U.S. Space Program. As a bonus, the Air Force included a color movie of Astronaut White's "walk in space."

The M.I.T. Dames, under the leadership of co-chairwomen Alice Phillips (Mrs. John J. Phillips '38) and Sharon McConnell (Mrs. Dan R. McConnell '61), planned to have luncheon November 10 to hear the press and cultural consul of the Norwegian Embassy.

Future activities of the M.I.T. Club of Washington now taking shape include a dinner meeting at the Cosmos Club on January 27, featuring as guest speaker Mrs. Donald McArthur, a Divisional Director of the Peace Corps.

A program of continuing education in the form of a Technical Seminar Series will begin in February. The first session will be directed by several M.I.T. professors who will acquaint a large contingent of Washington alumni with new advances in modern technology.—Dan R. McConnell, '61, 4134A Suitland Road, Suitland, Md.

Sloan Fellows

C. A. Canham, '63, has been appointed by the Kimberly-Clark Corporation to the newly created post of Area Director for the Far East. This area includes extensive operations for the Kimberly-Clark Corporation in Australia, the Philippines, Japan, Singapore, and Malaysia. In his new position he will be responsible for technical and management liaison between the company's United States headquarters and its operations in South-East Asia and the Far East. . . . Albert L. Baker, Jr., '65, has recently been made President of RCA Institutes, Inc., a service of Radio Corporation of America. Prior to his year at M.I.T. as a Sloan Fellow, Mr. Baker was manager of Contract Development of the RCA Service Company.

H. W. Stigler, '65, was named Director of planning at the Field Engineering Division of International Business Machines Corporation. . . . Ray W. Heggland, '65, was promoted to chief geologist, international exploration department, of Continental Oil Company, with headquarters in New York. He formerly was division exploration manager for Continental in Louisiana.

Tech Dinghies Venture Out On Lake Ontario at Party

A fall Party was held September 23 at the Youngstown Yacht Club, Youngstown, N.Y., by the M.I.T. Club of Buffalo and Niagara Falls. Arrangements were made through the courtesy of Karr Parker, '41, by Charles Diebold III, '58, president of the club. Tech dinghies were available for sailing during the afternoon and some hardy souls ventured out in spite of rugged Lake Ontario weather. Among those sailing were Carl Bernhardt, Tom Hooker, Sandy Nobel, and Fino Menendez. Cocktails and dinner were topped off with a demonstration by an internationally known sleight-of-hand expert. The moral was "never gamble with strangers—or friends either." The next meeting will be a local plant visit. About 70 members and their wives attended the fall party.—Mathew N. Hayes, '36, 78 Northlidge Drive, Buffalo, N.Y. 14226

Dean Burchard Addresses Northern California Alumni

The M.I.T. Club of Northern California had a dinner meeting in Palo Alto on September 29 at which Dean John E. Burchard, now visiting professor at the University of California, discussed the problems of city growth and the formation of a megalopolis. The subject was extremely pertinent on the San Francisco Peninsula, the San Francisco Bay Area now having two and one-half million people.

The meeting was arranged by Robert Spivock, '63, Assistant Secretary-Treasurer; Roger Borovoy, '56, Secretary-Treasurer, and George Bond, '57, Vice-president.

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I NSTITUTE YESTERYEARS

25 Years Ago

In his Annual Report, President Karl T. Compton, after recalling the objectives for which the Institute was founded and emphasizing the contributions of engineers and scientists in the industrial development of the nation in times of peace, continued by saying that "in a time of military crisis, technological efficiency in production, as well as in the design of instruments of defense and offense, is the basic element of national defense.

"Protection of the Western Hemisphere, and especially of the North American continent, against any possible invasion by force is the firm determination of all true Americans. Equally important, and more difficult, is defense of the spirit and action which our forefathers won for us by generations of struggle and which is steadily threatened alike by subversive influences from without and vicious ambitions from within. Both tend to undermine our strength by sowing doubt and discord. Sometimes these influences operate insidiously in the guise of high idealism, as in the cause of peace or human rights; sometimes they operate openly to incite violence and class hatred. . . ."

■ The Editor of *The Review* observed: "Full utilization of the highly specialized and thoroughly equipped automotive testing floor which is the chief feature of the original Sloan Automotive Engine Laboratory erected over a decade ago, is insured for the future by completion of a two-story addition to the structure, which has been built through the generosity of Alfred P. Sloan, Jr., '95.

"The new building, which contains drafting, lecture, machine-shop, storage, and office space, and which enables the Institute again to display the rich possibilities of direct functional architecture, relieves the original laboratory of unfortunate congestion. This congestion could be tolerated well enough in ordinary times, but its elimination became

imperative as Technology's abilities had to be more intensively drawn on in the mastery of problems of national defense."

50 Years Ago

In his Annual Report, President Richard C. Maclaurin noted that "the simplest report of progress" on the Cambridge property would be "to invite the inspection of the buildings. The exterior is now practically complete, and although the general view is somewhat marred by the temporary obstructions in the main court, it is now practicable to form a judgment of the effectiveness of the architectural treatment.

"It seems certain now that the buildings will be completed within the estimate of cost made by the Stone & Webster Engineering Corporation when final plans were adopted. It is a pleasure to add that those who have supplied most of the funds needed for this great undertaking have expressed themselves as thoroughly satisfied with the work and with the way in which it has been carried out. It is planned to have formal exercises for the dedication of the buildings in June."

75 Years Ago

"The 16th Annual Meeting and Dinner of the Alumni Association was held at Young's Hotel, Boston, on Friday, December 26, 1890, a driving snow storm prevailing." Nevertheless, exactly 50 persons were recorded on the attendance roll.

New officers were elected as follows: Henry M. Howe, '71, to be the 5th President, with Charles T. Main, '76, as Vice-president. Professor C. Frank Allen, '72, was re-elected as Secretary.

■ "For the past few years," wrote the Editor of *The Tech*, "there has been much dissatisfaction about the amount of vacation that was allowed at Christmas; many vain petitions have been offered to the faculty for a day or two more at that

time, but these requests have always been made too late to be of much effect. This year the subject has been discussed early in the term, and the mass meeting of last week has definitely settled the question.

"For the next year or two, at any rate, the Holidays will be as heretofore, unless the Faculty takes the initiative and changes them of its own accord. It is sincerely hoped that no one will attempt this year to get up a useless petition for a longer vacation at Christmas. The men here have had a chance to make a reasonable request for two or three extra days at that time, and have preferred, instead, to take the Holidays at Thanksgiving. The matter must now be considered settled."

100 Years Ago

At the 45th Meeting of the "Government," held December 19, President Rogers announced "that the evening Courses of Instruction . . . had been commenced under very favorable auspices." These evening courses had been established by the acceptance of an offer made by John A. Lowell, Trustee of the Lowell Institute, "to devote \$3,000 a year to be divided among the teachers in proportion to the time devoted by each."

President Rogers stated that "applicants for admission were in number double that which the Institute, as at present situated, can accommodate; viz., 40 in the classes of Mathematics and of Descriptive Geometry; and 100 each in the Classes on the English Language and its Literature, and in French Readings. . . . The opening of the contemplated Chemical Courses is delayed by the tardiness in preparing the requisite rooms in the new Building. . . .

"The Treasurer announced that there were in the Treasury about \$4,000 only, exclusive of the amount which must be used for Educational purposes."

As recalled for Review readers by the late H. E. Lobdell, '17.

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Capacitance:

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(series or parallel)

Inductance:

0.05 μ H to 1100 H in 7 ranges
(series or parallel)

At 1 kc/s:

D (series C): 0.0005 to 1
Q (series L): 0.5 to 50
Q (series R): 0.0005 to 1.2 Inductive

D (parallel C): 0.02 to 2
Q (parallel L): 1 to 2000
Q (parallel G): 0.0005 to 1.2 Capacitive

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